START

008051

# RCRA Part B Permit Application
# Alkali Metal Treatment
# and Storage Facilities

# TABLE OF CONTENTS

# TABLE OF CONTENTS

(Continued)

TABLE OF CONTENTS

(Continued)

TABLE OF CONTENTS
(Continued)

TABLE OF CONTENTS

(Continued)

# TABLE OF CONTENTS
(Continued)

## TABLE OF CONTENTS

(Continued)

# LIST OF TABLES

# LIST OF FIGURES

# FOREWORD

The U. S. Department of Energy, Richland Operations Office (DOE-RL) Part B Permit Application for the Hanford Site consists of separate permit applications for the following hazardous waste treatment, storage, and disposal units:

1. The Nonradioactive Dangerous Waste Landfill and Storage Facilities
2. Alkali Metal Treatment and Storage Facilities
3. Low-Level Burial Grounds and Retrievable Storage

In addition, the following hazardous waste units will be closed under interim status and have been described in a closure and/or post-closure plan:

1. The 300 Area Process Trenches (Closure/Post-Closure Plan)
2. Solar Evaporation Basins (Closure/Post-Closure Plan)
3. Solvent Evaporator (Closure Plan only)

Each separate permit application provides a complete description of hazardous waste management activities as is required in the Washington Administrative Code (WAC) 173-303-806 and Title 40 Code of Federal Regulations (CFR) Part 270 Subpart B. It is anticipated that each separate Part B will be reviewed individually and will undergo subsequent revisions prior to acceptance by the State of Washington Department of Ecology (WDOE) and the United States Environmental Protection Agency, Region X (EPA).

The following submittal contains the DOE-RL Part B Permit Application for the Alkali Metal Treatment and Storage Facilities.

# SECTION A
# PART A APPLICATION

## A-1 INTRODUCTION

This Part B Permit Application for the Hanford Site was prepared for the U.S. Department of Energy, Richland Operations Office (DOE-RL) for submittal to the State of Washington Department of Ecology (WDOE) and the U.S. Environmental Protection Agency, Region X (EPA) on November 8, 1985. It contains proposed permit conditions for the DOE-RL Alkali Metal Treatment and Storage Facilities.

## A-2 PART A APPLICATION

The completed Part A application for the Alkali Metal Treatment and Storage Facilities is included in the following pages. Five separate Part A applications are included which cover the following units:

| | UNIT | PROCESS(ES) |
|---|---|---|
| 1. | 221-Containment System Test Facility | Thermal Treatment |
| 2. | Alkali Metal Treatment Facility - 3718-F | Tank Treatment, Thermal Treatment, Container Storage |
| 3. | Large Sodium Fire Facility - 105-DR | Thermal Treatment, Container Storage |
| 4. | Maintenance and Storage Facility | Tank Treatment |
| 5. | 324 Sodium Removal Pilot Plant | Tank Treatment |

# WASHINGTON STATE
## DANGEROUS WASTE PERMIT
## GENERAL INFORMATION

**Permit Application Process**

There are two parts to a Dangerous Waste Permit Application—Part A and Part B. Part A consists of Form 1 and Form 3. Part B requires detailed site—specific information such as geologic, hydrologic, and engineering data. WAC 173-303-800 specifies the information that will be required from dangerous waste management facilities in Part B.

**Operation During Interim Status**

Part A of the permit application defines the processes to be used for treatment, storage, and disposal of dangerous wastes, the design capacity of such processes, and the specific dangerous wastes to be handled at a facility during the interim status period. Once Part A is submitted to the Department of Ecology, changes in the dangerous wastes handled, changes in design capacities, changes in processes, and changes in ownership or operational control at a facility during the interim status period may only be made in accordance with the procedures in WAC 173-303-820. Changes in quantity of waste handled at a facility during interim status can be made without submitting a revised Part A provided the quantity does not exceed the design capacities of the processes specified in Part A of the permit application. Failure to furnish all information required to process a permit application is grounds for termination of an interim status permit.

**Confidential Information**

All information submitted in this form will be subject to public disclosure, to the extent provided by RCRA and the Freedom of Information Act, 5 U.S.C. Section 552, and EPA's Business Confidentiality Regulations, 40 CFR Part 2 *(see especially 40 CFR 2.305)*, and will be subject to the State of Washington Public Records Act chapter 42.17 RCW and chapter 43.21A-160 RCW. Persons filing this form may make claims of confidentiality. Such claims must be clearly indicated by marking "confidential" on the specific information on the form for which confidential treatment is requested or on any attachments, and must be accompanied, at the time of filing, by a written substantiation of the claim, by answering the following questions:

**Confidential Information (continued)**

A. Which portions of the information do you claim are entitled to confidential treatment?

B. For how long is confidential treatment desired for this information?

C. What measures have you taken to guard against undesired disclosure of the information to others?

D. To what extent has the information been disclosed to others, and what precautions have been taken in connection with that disclosure?

E. Has the Department of Ecology, EPA or any other Federal or State agency made a pertinent confidentiality determination? If so, what would those harmful effects be and why should they be viewed as substantial? Explain the causal relationship between disclosure and the harmful effects.

If no claim of confidentiality or no substantiation accompanies the information when it is submitted, EPA or the department may make the information available to the public without further notice to the submitter.

**Definitions**

Terms used in these instructions and in this form are defined in the Definitions section of the Dangerous Waste Regulation, chapter 173-303 WAC.

# FORM 1—INSTRUCTIONS

**This form must be completed by all applicants.**

**Completing This Form**

Please type or print. If you print, place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response.

**Section I**

Space is provided at the upper right hand corner of Form 1 for insertion of your EPA/State identification number. If you have an existing facility, enter your identification number If you don't have an EPA/State identification number, please contact the Department of Ecology (206) 459-6303 and one will be provided for you If your facility is new (not yet constructed), leave this item blank.

**Section II**

Enter the facility's official or legal name. Do not use a colloquial name.

**Section III**

Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted if necessary.

**Section IV**

Give the complete mailing address of the office where correspondence should be sent. This often is not the address used to designate the location of the facility or activity.

**Section V**

Give the address or location of the facility identified in Section III of this form. If the facility lacks a street name or route number, give the most accurate alternative geographic information (e.g., section number or quarter section number from county records or at intersection of Rts. 425 and 22).

**Section VI**

List, in descending order of significance, the four 4-digit standard industrial classification (SIC) codes which best describe your facility in terms of the principal products or services you produce or provide. Also, specify each classification in words. These classifications may differ from the SIC codes describing the operation generating the dangerous wastes.

SIC code numbers are descriptions which may be found in the "Standard Industrial Classification Manual" prepared by the Executive Office of the President, Office of Management and Budget, which is available from the Government Printing Office, Washington, D.C. Use the current edition of the manual. If you have any questions concerning the appropriate SIC code for your facility, contact your Department of Ecology Regional office (see Table 1).

Table 1. Department of Ecology Regional Offices

| | |
|---|---|
| Northwest Regional Office<br>4350 - 150th NE<br>Redmond, Washington 98052<br>Tel: 206-885-1900 | Southwest Regional Office<br>7272 Cleanwater Lane<br>Olympia, Washington 98504<br>Tel: 206-753-2353 |
| Eastern Regional Office<br>East 103 Indiana<br>Spokane, Washington 99207<br>Tel: 509-456-2926 | Central Regional Office<br>3601 West Washington<br>Yakima, Washington 98903<br>Tel: 509-575-2490 |

**Section VII-A**

Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity which operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. Do not use a colloquial name.

**Section VII-B**

Indicate whether the entity which operates the facility also owns it by marking the appropriate box

**Section VII-C**

Enter the appropriate letter to indicate the legal status of the operator of the facility. Indicate "public" for a facility solely owned by local government(s) such as a city, town, county, parish, etc.

**Sections VII-D—H**

Enter the telephone number and address of the operator identified in Item VII-A

**Section VIII**

Indicate whether the facility is located on Indian lands.

**Section IX**

Provide a topographic map or maps of the area extending at least to one mile beyond the property boundaries of the facility which clearly show the following

The legal boundaries of the facility;

The location and serial number of each of your existing and proposed intake and discharge structures;

All hazardous waste management facilities;

Each well where you inject fluids underground; and

All springs and surface water bodies in the area, plus all drinking water wells within ¼ mile of the facility which are identified in the public record or otherwise known to you.

If an intake or discharge structure, hazardous waste disposal site, or injection well associated with the facility is located more than one mile from the plant, include it on the map, if possible. If not, attach additional sheets describing the location of the structure, disposal site, or well, and identify the U.S. Geological Survey (or other) map corresponding to the location.

On each map, include the map scale, a meridian arrow showing north, and latitude and longitude at the nearest whole second. On all maps of rivers, show the direction of the current, and in tidal waters, show the directions of the ebb and flow tides. Use a 7-½ minute series map published by the U.S. Geological Survey, which may be obtained through the U.S Geological Survey Offices listed below. If a 7-½ minute series map has not been published for your facility site, then you may use a 15 minute series map from the U.S. Geological Survey. If neither a 7-½ nor 15 minute series map has been published for your facility site, use a plat map or other appropriate map, including all the requested information; in this case, briefly describe land uses in the map area (e.g., residential, commercial).

You may trace your map from a geological survey chart, or other map meeting the above specifications. If you do, your map should bear a note showing the number or title of the map or chart it was traced from. Include the names of nearby towns, water bodies, and prominent points.

| U.S.G.S. OFFICES | AREA SERVED |
|---|---|
| Western Mapping Center<br>National Cartographic Information Center<br>U.S.G.S.<br>345 Middlefield Road<br>Menlo Park, Ca. 94025<br>Phone No. (415) 323-8111 | Ariz., Calif., Hawaii, Idaho, Nev., Oreg., Wash., American Samoa, Guam, and trust Territories |

**Section X**

Briefly describe the nature of your business (e.g., products produced or services provided).

**Section XI**

For a corporation, by a principal executive officer of at least the level of vice president.

For partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

For a municipality, State, Federal, or other public facility, by either a principal executive officer or ranking elected official.

**FORM 1**

State of Washington Department of Ecology

**WASHINGTON STATE**

**DANGEROUS WASTE PERMIT GENERAL INFORMATION**

*(Read "Form 1 Instructions" before starting)*

**I. EPA/STATE I.D. NUMBER**

W A 7 8 9 0 0 0 8 9 6 7

**II. NAME OF FACILITY**

US DEPT OF ENERGY RICHLAND OPERATIONS OFFICE

**III. FACILITY CONTACT**

| A. NAME & TITLE (last, first, & title) | B. PHONE (area code & no.) |
|---|---|
| FITZSIMMONS, T.R. ASSISTANT MGR SAFETY* | 509 376 7387 |

**IV. FACILITY MAILING ADDRESS**

A. STREET OR P.O. BOX: P.O. BOX 550

| B. CITY OR TOWN | C. STATE | D. ZIP CODE |
|---|---|---|
| RICHLAND | WA | 99352 |

**V. FACILITY LOCATION**

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: HANFORD SITE

B. COUNTY NAME: BENTON

| C. CITY OR TOWN | D. STATE | E. ZIP CODE | F. COUNTY CODE (if known) |
|---|---|---|---|
| RICHLAND | WA | 99352 | 005 |

**IV. SIC CODES** *(4-digit, in order of priority)*

| | Code | (specify) |
|---|---|---|
| A. FIRST | 9711 | NATIONAL SECURITY |
| B. SECOND | 8922 | NUCLEAR NONCOMMERCIAL RESEARCH DEVELOPMENT AND EDUCATION |
| C. THIRD | 9611 | ADMINISTRATION AND GENERAL ECONOMICS PROGRAM |
| D. FOURTH | 4911 | STEAM - ELECTRIC GENERATOR |

**VII. OPERATOR INFORMATION**

A. NAME: US DEPT OF ENERGY RICHLAND OPERATIONS

B. Is the name listed in Item VII A also the owner? ☒ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box; if "Other", specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

Answer: F (specify):

D. PHONE (area code & no.): 509 376 7387

E. STREET OR P.O. BOX: PO BOX 550

| F. CITY OR TOWN | G. STATE | H. ZIP CODE |
|---|---|---|
| RICHLAND | WA | 99352 |

**VIII. INDIAN LAND**

Is the facility located on Indian lands? ☐ YES ☒ NO

**COMPLETE BACK PAGE**

*Office of Assistant Manager for Safety, Safeguards and Quality Assurance

ECY 030-31

ECL4 -079-

## IX. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids undergound. Include all springs, rivers and other surface water bodies in the map ares. See instructions for precise requirements.

## X. NATURE OF BUSINESS *(provide a brief description)*

O NATIONAL DEFENSE NUCLEAR MATERIAL PRODUCTION

O ENERGY RESEARCH AND TECHNOLOGY DEVELOPMENT

O DEFENSE NUCLEAR WASTE MANAGEMENT

O BYPRODUCT STEAM, SOLD FOR ELECTRIC POWER GENERATION

O AND SIC 15: BUILDING CONSTRUCTION - GENERAL CONTRACTORS AND OPERATIVE BUILDERS

## XI. CERTIFICATION *(see instructions)*

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| A. NAME & OFFICIAL TITLE (type or print) | B. SIGNATURE | C. DATE SIGNED |
| --- | --- | --- |
| T.R. FITZSIMMONS, ASST. MANAGER | | |

# FORM 3—INSTRUCTIONS

**Completing This Form**

Please type or print. If you print place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response

**Section I**

Existing dangerous waste management facilities should enter their EPA/STATE Identification Number *(if known)*. New facilities should leave this item blank.

**Section II**

A. FIRST APPLICATION. If this is the first application that is being filed for the facility place an "X" in either the Existing Facility box or the New Facility box.

1. EXISTING FACILITY. Existing facilities are:

a. Those facilities which received hazardous waste for treatment, storage, and/or disposal on or before November 19, 1980; or

b. Those facilities for which construction had commenced on or before November 15, 1980. Construction had "commenced" only if:

(1) The owner or operator had obtained all necessary Federal, State, and local preconstruction approvals or permits; and

(2-a) A continuous physical, on—site construction program had begun *(facility design or other preliminary non—physical and non—site specific preparatory activities do not constitute an on—site construction program)*, or

(2-b) The owner or operator had entered into contractual obligations *(options to purchase or contracts for feasibility, engineering, and design studies do not constitute contractual obligations)* which could not be cancelled or modified without substantial loss. Generally, a loss is deemed substantial if the amount an owner or operator must pay to cancel construction agreements or stop construction exceeds 10% of the total project cost.

EXISTING FACILITY DATE. If the Existing Facility box is marked, enter the date dangerous waste operations began *(i.e., the date the facility began treating, storing, or disposing of hazardous waste)* or the date construction commenced.

2. NEW FACILITY. New facilities are all facilities for which construction commenced, or will commence, after November 19, 1980.

NEW FACILITY DATE. If the New Facility box is marked, enter the date that operation began or is expected to begin.

B. REVISED APPLICATION. If this is a subsequent application that is being filed to amend data filed in a previous application, place an "X" in the appropriate box to indicate whether the facility has interim status or a permit.

1. FACILITY HAS AN INTERIM STATUS PERMIT. Place an "X" in this box if this is a revised application to make changes at a facility during the interim status period.

2. FACILITY HAS A FINAL PERMIT. Place an "X" in this box if this is a revised application to make changes at a facility for which a permit has been issued.

*(NOTE When submitting a revised application, applicants must resubmit in their entirety each item on the application for which changes are requested. In addition, Items I and IX [and Item X if applicable] must be completed. It is not necessary to resubmit information for other items that will not change).*

**Section III**

The information in Section III describes all the processes that will be used to treat, store, or dispose of dangerous waste at the facility. The design capacity of each process must be provided as part of the description. The design capacity of injection wells and landfills at existing facilities should be measured as the remaining, unused capacity. See the form for the detailed instructions to Section III.

**Section IV**

The information in Section IV describes all the dangerous wastes that will be treated, stored, or disposed at the facility. In addition, the processes that will be used to treat, store, or dispose of each waste and the estimated annual quantity of each waste must be provided. See the form for the detailed instructions to Section IV.

**Section V**

All existing facilities must include a drawing showing the general layout of the facility. This drawing should be approximately to scale and fit in the space provided on the form. This drawing should show the following:

The property boundaries of the facility;

The areas occupied by all storage, treatment, or disposal operations that will be used during interim status;

The name of each operation. *(Example—multiple hearth incinerator, drum storage area, etc.)*;

Areas of past storage, treatment, or disposal operations;

Areas of future storage, treatment, or disposal operations; and

The approximate dimensions of the property boundaries and all storage, treatment, and disposal areas.

**Section VI**

All existing facilities must include photographs that clearly delineate all existing structures; all existing areas for storing, treating, or disposing of hazardous waste; and all known sites of future storage, treatment, or disposal operations. Photographs may be color or black and white, ground-level or aerial. Indicate the date the photograph was taken on the back of each photograph.

**Section VII**

Enter the latitude and longitude of the facility in degrees, minutes, and seconds. For larger facilities, enter the latitude and longitude at the approximate mid-point of the facility. You may use the map you provided for Section IX of Form 1 to determine latitude and longitude Latitude and longitude information is also available from Regional Offices of the U.S. Department of Interior, Geological Survey and from State agencies such as the Department of Natural Resources.

**Section VIII**

See the form for the instructions to Section VIII.

**Section IX and Section X**

All facility owners must sign Section IX. If the facility will be operated by someone other than the owner, then the operator must sign Section X. Federal regulations require the certification to be signed as follows:

A. For a corporation, by a principal executive officer at least the level of vice president;

B. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

C. For a municipality, State, Federal, or other public facility, by either a principal executive officer or ranking elected official.

FORM 3

221-T CONTAINMENT SYSTEMS TEST FACILITY

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e. 12 characters/inch)

FORM **3**

# DANGEROUS WASTE PERMIT APPLICATION

**I. EPA/STATE I.D. NUMBER**
W A 7 8 9 0 0 0 8 9 6 7

## FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (mo., day, & yr.) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

MO ___ DAY ___ YR 7 7 — FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

☐ 2. NEW FACILITY *(Complete item below.)*

MO ___ DAY ___ YR ___ — FOR NEW FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☐ 2. FACILITY HAS A FINAL PERMIT

## III. PROCESSES — CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. **PROCESS DESIGN CAPACITY** — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER (barrel, drum, etc.) | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D80 | GALLONS OR LITERS |
| LANDFILL | D81 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D82 | *ACRES OR HECTARES* |
| OCEAN DISPOSAL | D83 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D84 | GALLONS OR LITERS |
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR, GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.) | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|
| GALLONS | G |
| LITERS | L |
| CUBIC YARDS | Y |
| CUBIC METERS | C |
| GALLONS PER DAY | U |
| LITERS PER DAY | V |
| TONS PER HOUR | D |
| METRIC TONS PER HOUR | W |
| GALLONS PER HOUR | E |
| LITERS PER HOUR | H |
| ACRE-FEET | A |
| HECTARE-METER | F |
| ACRES | B |
| HECTARES | Q |

**EXAMPLE FOR COMPLETING SECTION III** *(shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400* gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

| LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY | LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|---|---|---|---|---|
| X-1 | S 0 2 | 600 | G | | 5 | | | | |
| X-2 | T 0 3 | 20 | E | | 6 | | | | |
| 1 | T 0 4 | 100 | V | | 7 | | | | |
| 2 | | | | | 8 | | | | |
| 3 | | | | | 9 | | | | |
| 4 | | | | | 10 | | | | |

Continued from the front.

## III. PROCESSES (continued)

C SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

Line 1 - Thermal treatment

## IV. DESCRIPTION OF DANGEROUS WASTES

A. **DANGEROUS WASTE NUMBER** — Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste(s) that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1 PROCESS CODES.

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non—listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2 PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER — Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

**EXAMPLE FOR COMPLETING SECTION IV** *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | | | | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|---|---|---|
| X-1 | K054 | 900 | P | T03 | D80 | | | |
| X-2 | D002 | 400 | P | T03 | D80 | | | |
| X-3 | D001 | 100 | P | T03 | D80 | | | |
| X-4 | D002 | | | T03 | D80 | | | included with above |


CONTINUE ON PAGE 3

Continued from page 2

NOTE Photocopy this page before completing if you have more than 26 wastes to list

| I.D. NUMBER (enter from page 1) |
|---|
| W A 7 8 9 0 0 0 8 9 6 7 |

## IV. DESCRIPTION OF DANGEROUS WASTES (continued)

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|
| 1 | D 0 0 1 | 25,000 | K | T 0 1 T 0 4 | |
| 2 | D 0 0 3 | Included with above | | | |
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| 26 | | | | | |

Continued from the front.

## IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

## V. FACILITY DRAWING

See Section V in the following pages

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

## VI. PHOTOGRAPHS

See Section VI in the following pages

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*

## VII. FACILITY GEOGRAPHIC LOCATION

| LATITUDE *(degrees, minutes, & seconds)* | LONGITUDE *(degrees, minutes, & seconds)* |
|---|---|
| 46 33 040 | 119 37 003 |

## VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| | | | |

## IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |

## X. OPERATOR CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

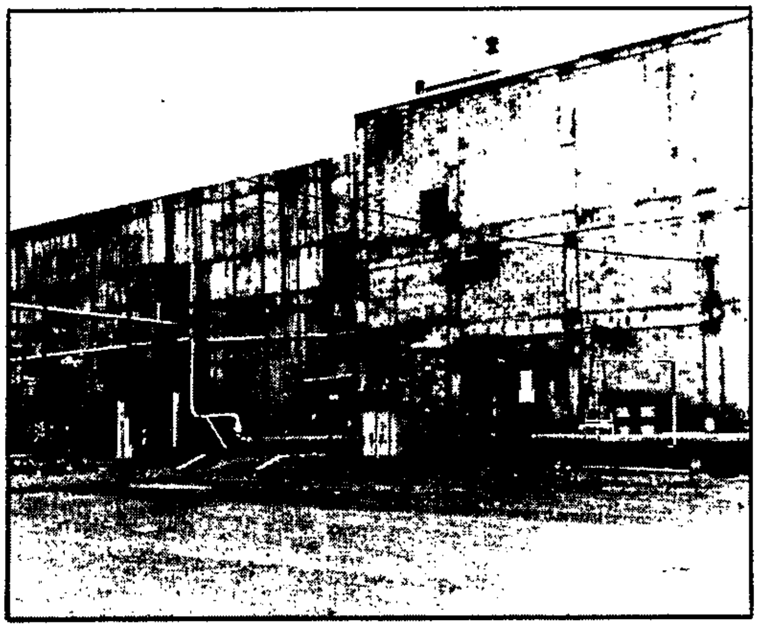
| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |

 CONTINUE ON PAGE 5

# SECTION V - FACILITY DRAWINGS

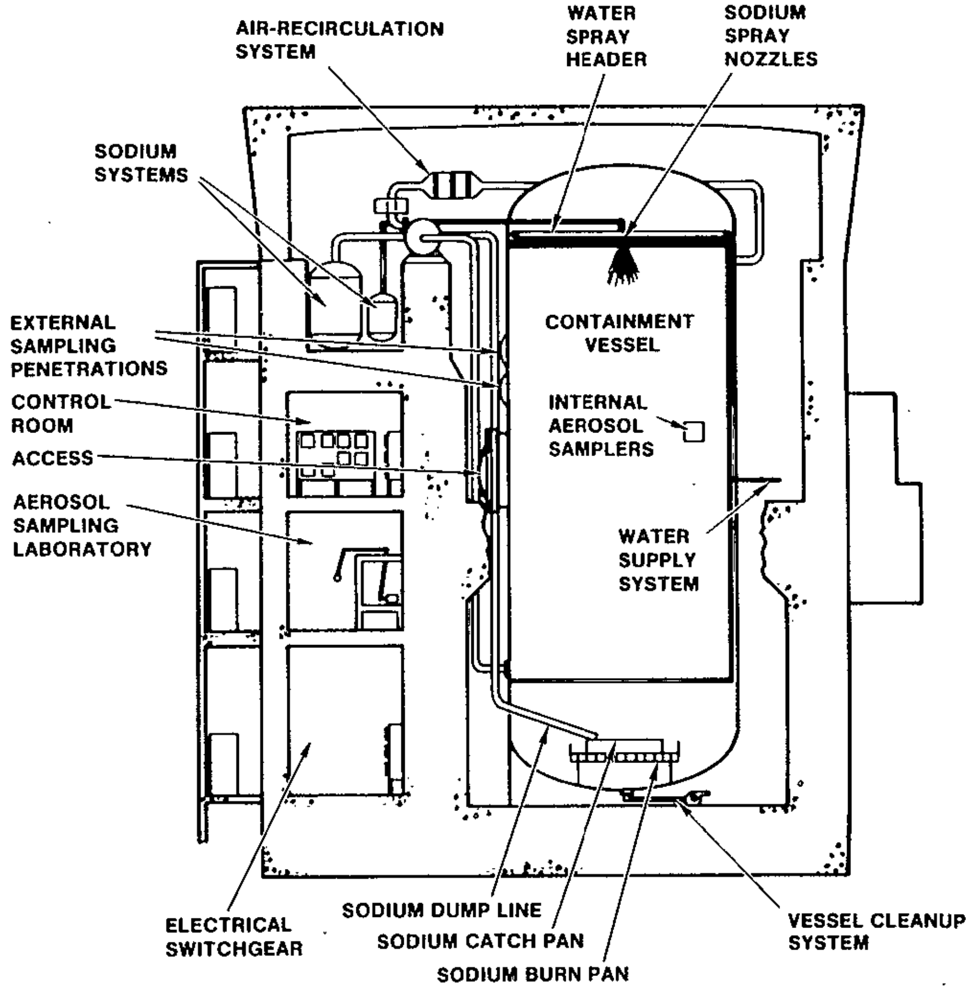
9 0 1 1 7 8 3 0 0 2 4

# 221-T/200 W AREA CONTAINMENT SYSTEMS TEST FACILITY



46° 33′ 40.484″ N
119° 37′ 03.349″ W

PHOTO TAKEN 1984



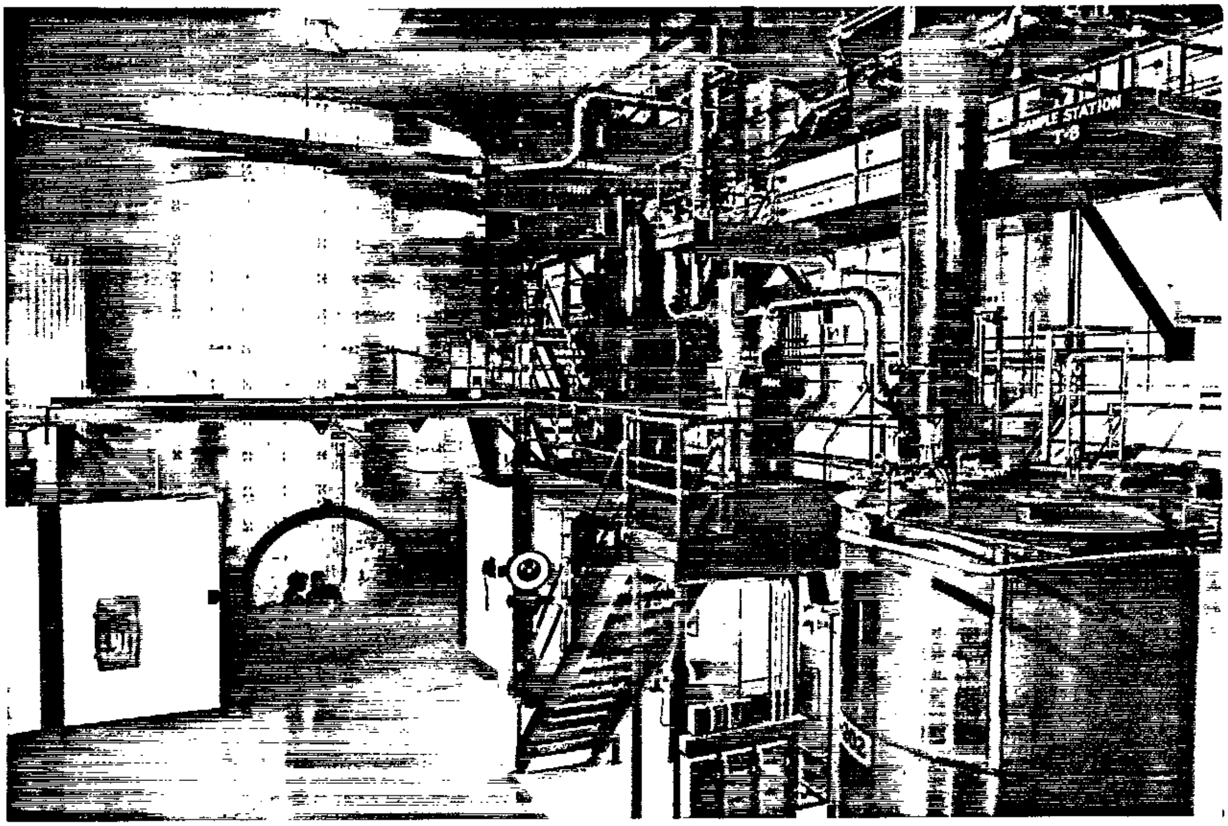

ELEVATION VIEW

2K8509-3.1

WA7890008967

# SECTION VI - PHOTOGRAPHS

# CONTAINMENT SYSTEMS
# TEST FACILITY
# 221-T/200-W AREA




46° 33' 14.601"
119° 32' 48.167"

PHOTO TAKEN 1978

FORM 3

3718-F ALKALI METAL TREATMENT AND STORAGE FACILITY

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

FORM 3

# DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER

W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (mo., day & yr.) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

☐ 2. NEW FACILITY *(Complete item below)*

| MO | DAY | YR |
|---|---|---|
| 0 9 | | 6 8 |

FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

| MO | DAY | YR |
|---|---|---|
| | | |

FOR NEW FACILITIES PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☐ 2. FACILITY HAS A FINAL PERMIT

## III. PROCESSES — CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. **PROCESS DESIGN CAPACITY** — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER (barrel, drum, etc.) | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D80 | GALLONS OR LITERS |
| LANDFILL | D81 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D82 | *ACRES OR HECTARES* |
| OCEAN DISPOSAL | D83 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D84 | GALLONS OR LITERS |

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.) | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|---|---|---|---|
| GALLONS | G | LITERS PER DAY | V | ACRE-FEET | A |
| LITERS | L | TONS PER HOUR | D | HECTARE-METER | F |
| CUBIC YARDS | Y | METRIC TONS PER HOUR | W | ACRES | B |
| CUBIC METERS | C | GALLONS PER HOUR | E | HECTARES | Q |
| GALLONS PER DAY | U | LITERS PER HOUR | H | | |

**EXAMPLE FOR COMPLETING SECTION III** *(shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400* gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

| LINE NUMBER | A. PROCESS CODE *(from list above)* | B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)* | 2. UNIT OF MEASURE *(enter code)* | FOR OFFICIAL USE ONLY | LINE NUMBER | A. PROCESS CODE *(from list above)* | B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)* | 2. UNIT OF MEASURE *(enter code)* | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|---|---|---|---|---|
| X-1 | S 0 2 | 600 | G | | 5 | | | | |
| X-2 | T 0 3 | 20 | E | | 6 | | | | |
| 1 | T 0 1 | 20 | V | | 7 | | | | |
| 2 | T 0 4 | 21 | V | | 8 | | | | |
| 3 | S 0 1 | 2000 | L | | 9 | | | | |
| 4 | | | | | 10 | | | | |

Continued from the front.

## III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

Line 2 - Thermal treatment

## IV. DESCRIPTION OF DANGEROUS WASTES

A. **DANGEROUS WASTE NUMBER** — Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste(s) that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

**For listed dangerous waste:** For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

**For non—listed dangerous wastes:** For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non—listed dangerous wastes that possess that characteristic or toxic contaminant.

**Note:** Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

**NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER** — Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

**EXAMPLE FOR COMPLETING SECTION IV** *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | | | | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|---|---|---|
| X-1 | K 0 5 4 | 900 | P | T 0 3 | D 8 0 | | | |
| X-2 | D 0 0 2 | 400 | P | T 0 3 | D 8 0 | | | |
| X-3 | D 0 0 1 | 100 | P | T 0 3 | D 8 0 | | | |
| X-4 | D 0 0 2 | | | T 0 3 | D 8 0 | | | included with above |

 CONTINUE ON PAGE 3

Continued from page 2

NOTE Photocopy this page before completing if you have more than 26 wastes to list

I.D. NUMBER (enter from page 1)

WA7890008967

## IV. DESCRIPTION OF DANGEROUS WASTES (continued)

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|
| 1 | D001 | 2000 | K | S01 T01 T04 | |
| 2 | D003 | Included with above | | | |
| 3 | | | | | |
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| 26 | | | | | |

Continued from the front.

## IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

T04: Thermal treatment of alkali metals.

## V. FACILITY DRAWING

See Section V in the following pages

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

## VI. PHOTOGRAPHS

See Section VI in the following pages

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

## VII. FACILITY GEOGRAPHIC LOCATION

| LATITUDE *(degrees, minutes, & seconds)* | LONGITUDE *(degrees, minutes, & seconds)* |
|---|---|
| 46 22 009 | 119 16 022 |

## VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| | | | |

## IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |

## X. OPERATOR CERTIFICATION

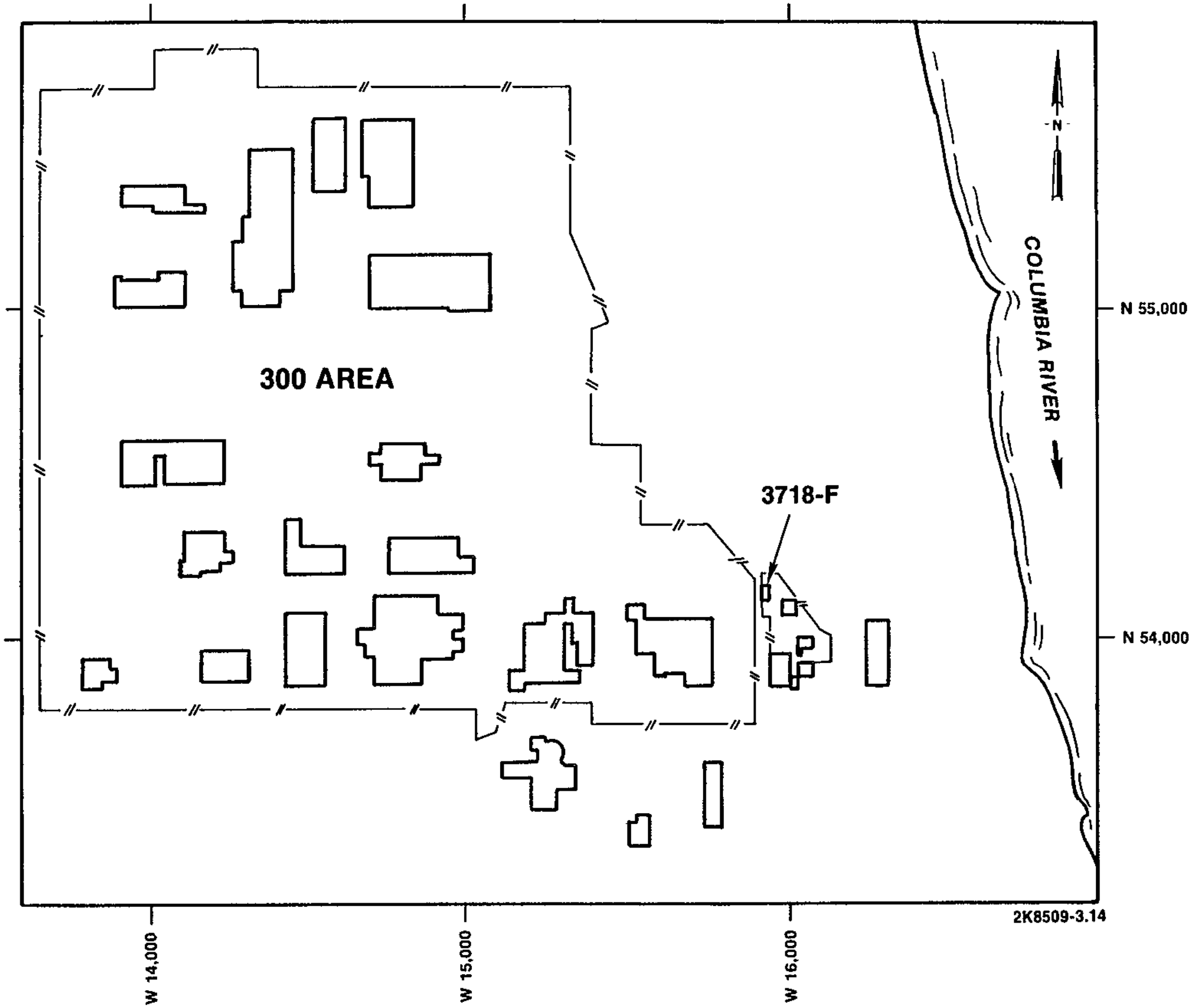
*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |


CONTINUE ON PAGE 5

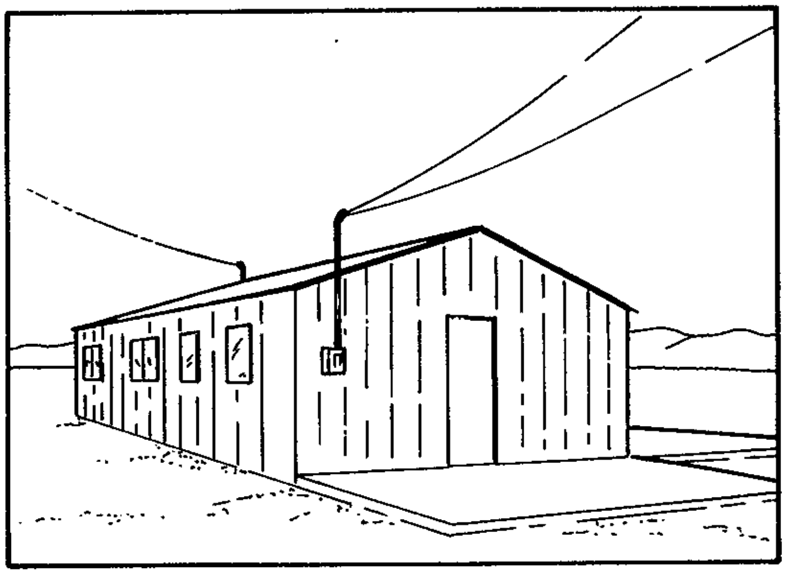
# SECTION V - FACILITY DRAWINGS

# 3718-F/300 AREA
# THE ALKALI METAL TREATMENT AND STORAGE FACILITY

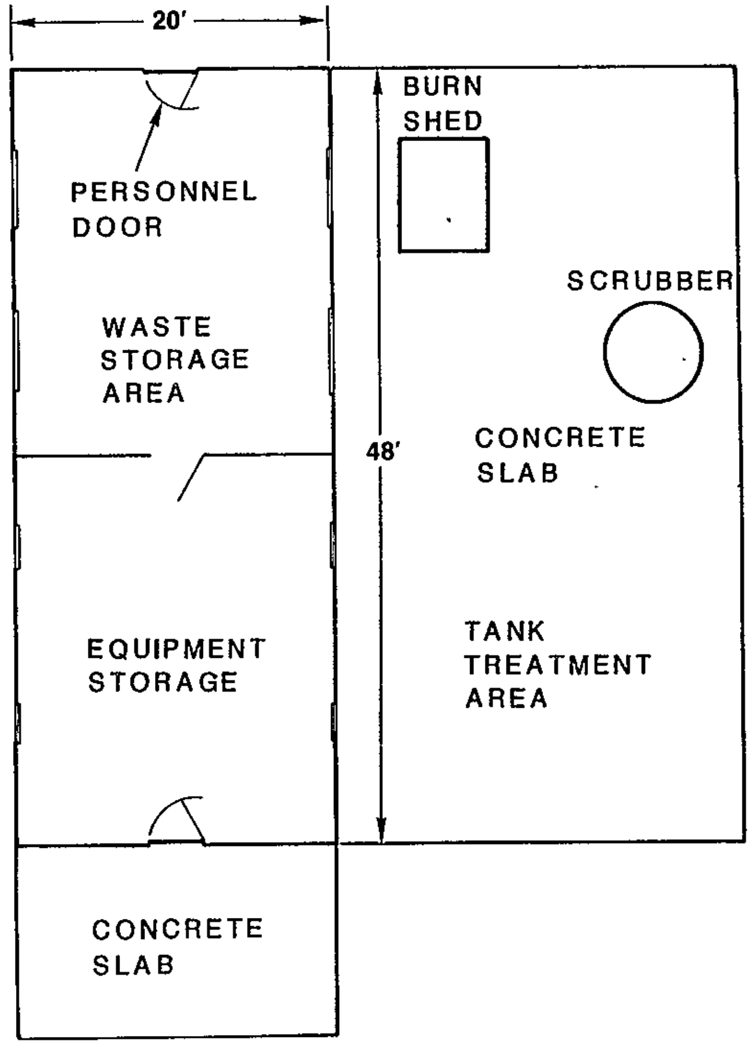


# 3718-F BUILDING/300 AREA THE ALKALI METAL TREATMENT AND STORAGE FACILITY

**One-story steel building with gabled ends, roof and siding of corrugated steel. Floor concrete pad. Lighting is fluorescent. Heat is provided by electric space heaters and cooling by a window air conditioner. The sodium disposal enclosure is built of sheet metal and has an 8 ft roll-up door. A 4,500 cfm scrubber is provided for sodium oxide removal.**



**46° 22′ 08.601″ N**
**119° 16′ 21.846″ W**




**FLOOR PLAN**

**2K8509-3.4**

SECTION VI - PHOTOGRAPHS

# 3718-F/300 AREA THE ALKALI METAL TREATMENT FACILITY

46° 22′ 08.601″ N 119° 16′ 21.846″ W

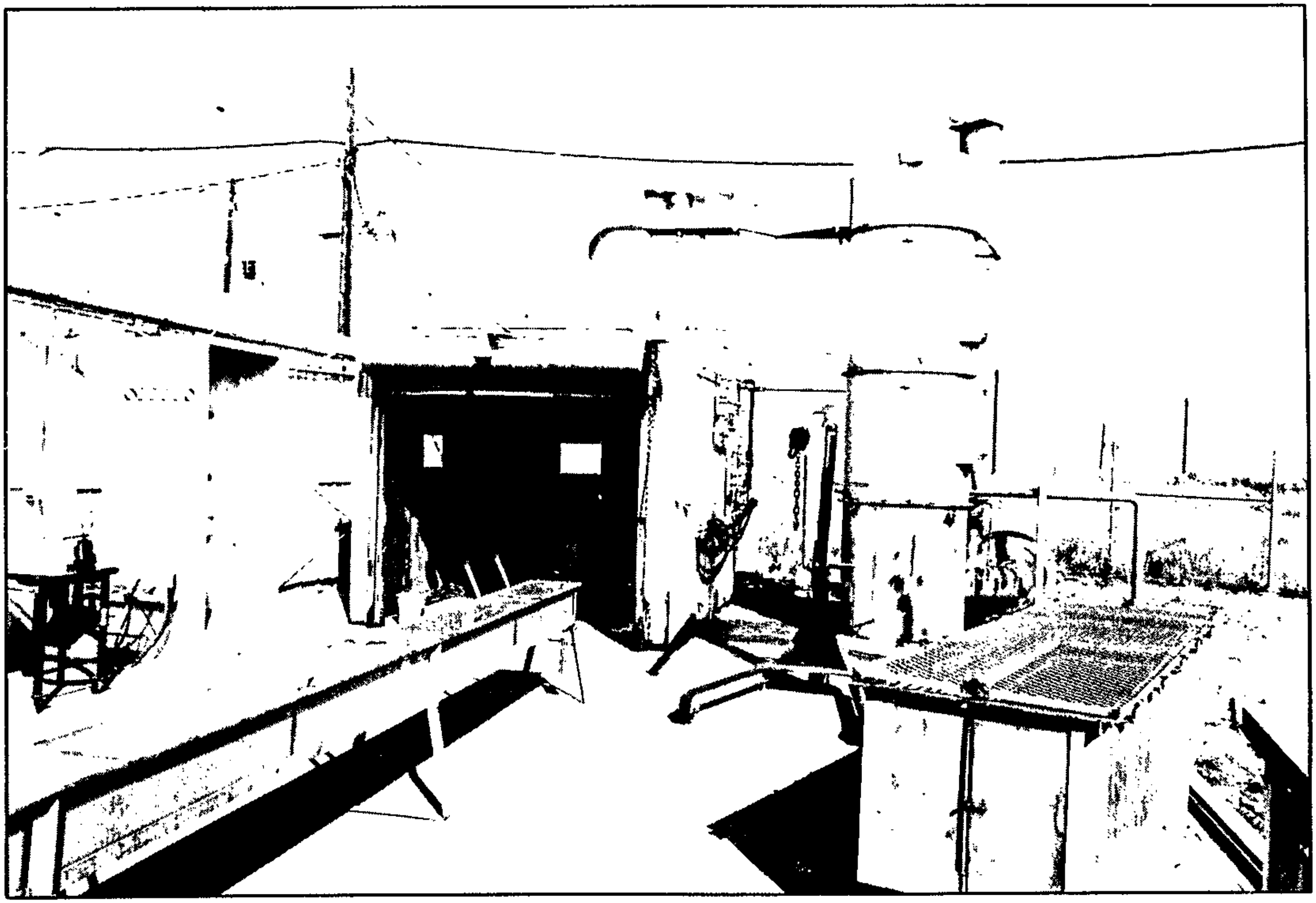


PHOTO TAKEN 1984

2K8505-7.9

ALKALI METAL TREATMENT
AND STORAGE FACILITY
3718-F/300 AREA

46° 22' 08.601"
119° 16' 21.846"

PHOTO TAKEN 1985

FORM 3

105-DR LARGE SODIUM FIRE FACILITY

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch)

FORM 3

# DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER

W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (mo., day & yr.) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

MO | DAY | YR 72 — FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

☐ 2. NEW FACILITY *(Complete item below.)*

MO | DAY | YR — FOR NEW FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☐ 2. FACILITY HAS A FINAL PERMIT

## III. PROCESSES — CODES AND DESIGN CAPACITIES

**A. PROCESS CODE** — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

**B. PROCESS DESIGN CAPACITY** — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER (barrel, drum, etc.) | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D80 | GALLONS OR LITERS |
| LANDFILL | D81 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D82 | ACRES OR HECTARES |
| OCEAN DISPOSAL | D83 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D84 | GALLONS OR LITERS |
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.) | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|
| GALLONS | G |
| LITERS | L |
| CUBIC YARDS | Y |
| CUBIC METERS | C |
| GALLONS PER DAY | U |
| LITERS PER DAY | V |
| TONS PER HOUR | D |
| METRIC TONS PER HOUR | W |
| GALLONS PER HOUR | E |
| LITERS PER HOUR | H |
| ACRE-FEET | A |
| HECTARE-METER | F |
| ACRES | B |
| HECTARES | Q |

**EXAMPLE FOR COMPLETING SECTION III** *(shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400* gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

| LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|
| X-1 | S02 | 600 | G | |
| X-2 | T03 | 20 | E | |
| 1 | T04 | 100 | V | |
| 2 | S01 | 20000 | L | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |



CONTINUE ON REVERSE

Continued from the front

## III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

Line 1 - Thermal treatment

## IV. DESCRIPTION OF DANGEROUS WASTES

A. **DANGEROUS WASTE NUMBER** — Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste(s) that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non—listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER — Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

**EXAMPLE FOR COMPLETING SECTION IV** *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | | | | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|---|---|---|
| X-1 | K054 | 900 | P | T03 | D80 | | | |
| X-2 | D002 | 400 | P | T03 | D80 | | | |
| X-3 | D001 | 100 | P | T03 | D80 | | | |
| X-4 | D002 | | | T03 | D80 | | | included with above |

 CONTINUE ON PAGE 3

Continued from page 2

NOTE Photocopy this page before completing if you have more than 26 wastes to list

| I.D. NUMBER (enter from page 1) |
|---|
| WA7 890 008 967 |

## IV. DESCRIPTION OF DANGEROUS WASTES (continued)

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|
| 1 | D001 | 20,000 | K | S01 T01 T04 | |
| 2 | D003 | Included with above | | | |
| 3 | | | | | |
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Continued from the front.

## IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

## V. FACILITY DRAWING

See Section V in the following pages

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

## VI. PHOTOGRAPHS

See Section VI in the following pages

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*

## VII. FACILITY GEOGRAPHIC LOCATION

| LATITUDE *(degrees, minutes, & seconds)* | LONGITUDE *(degrees, minutes, & seconds)* |
|---|---|
| 46 41 02.6 | 119 32 00.4 |

## VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| | | | |

## IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |

## X. OPERATOR CERTIFICATION

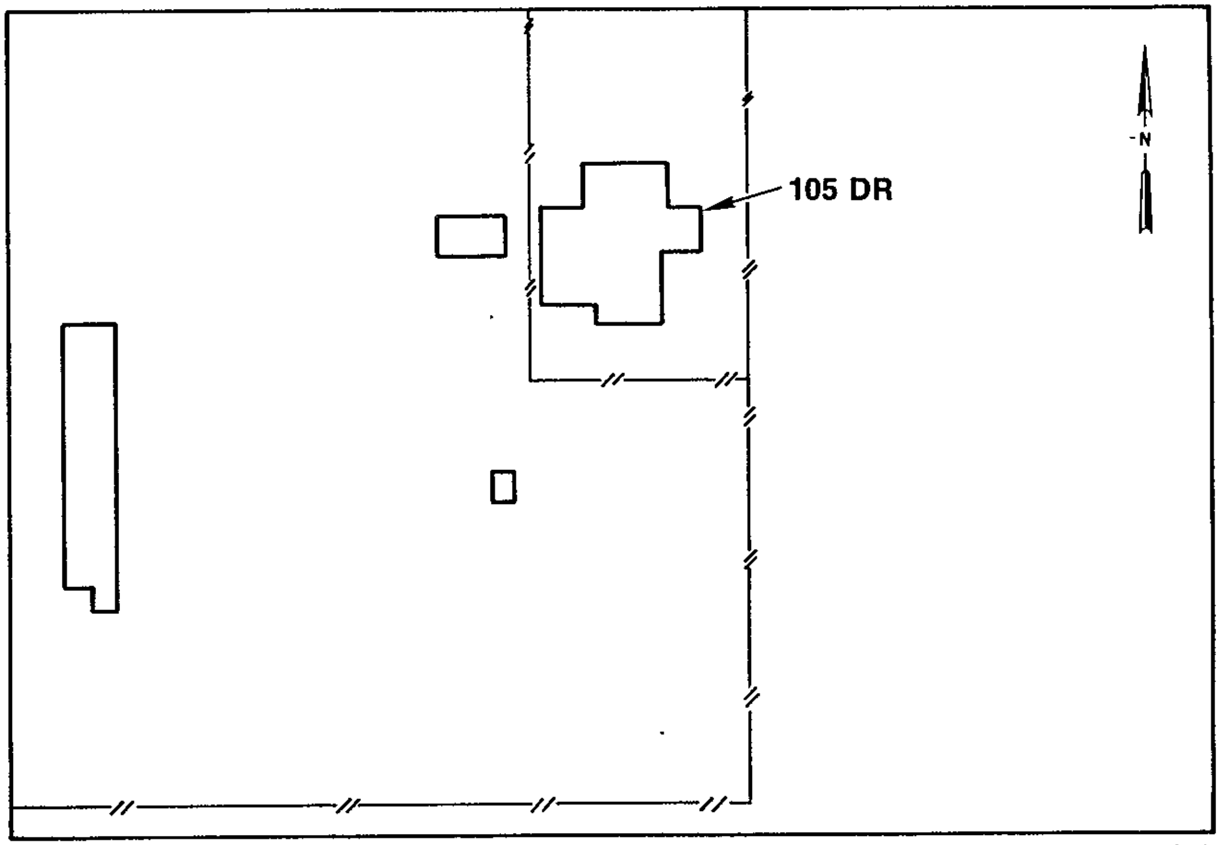
*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |


CONTINUE ON PAGE 5

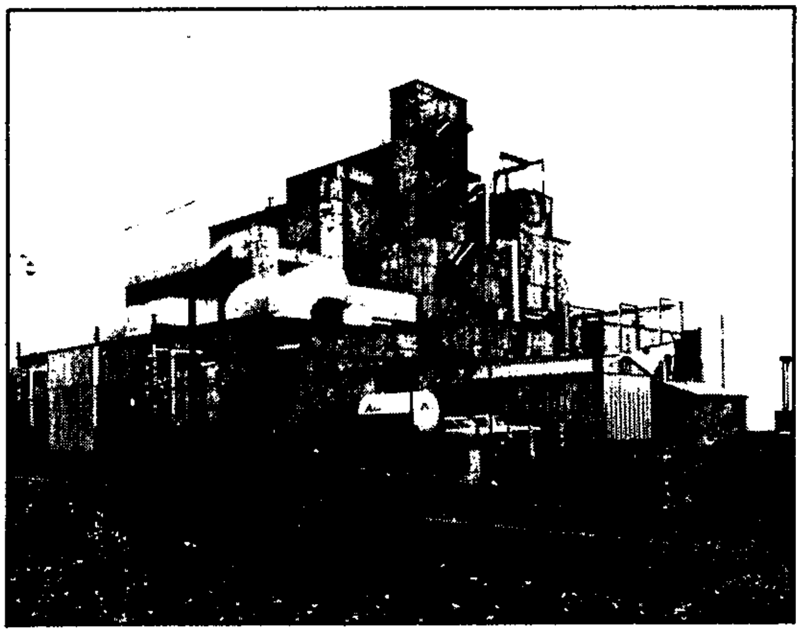
# SECTION V - FACILITY DRAWINGS

# 105-DR/100-D AREA LARGE SODIUM FIRE FACILITY



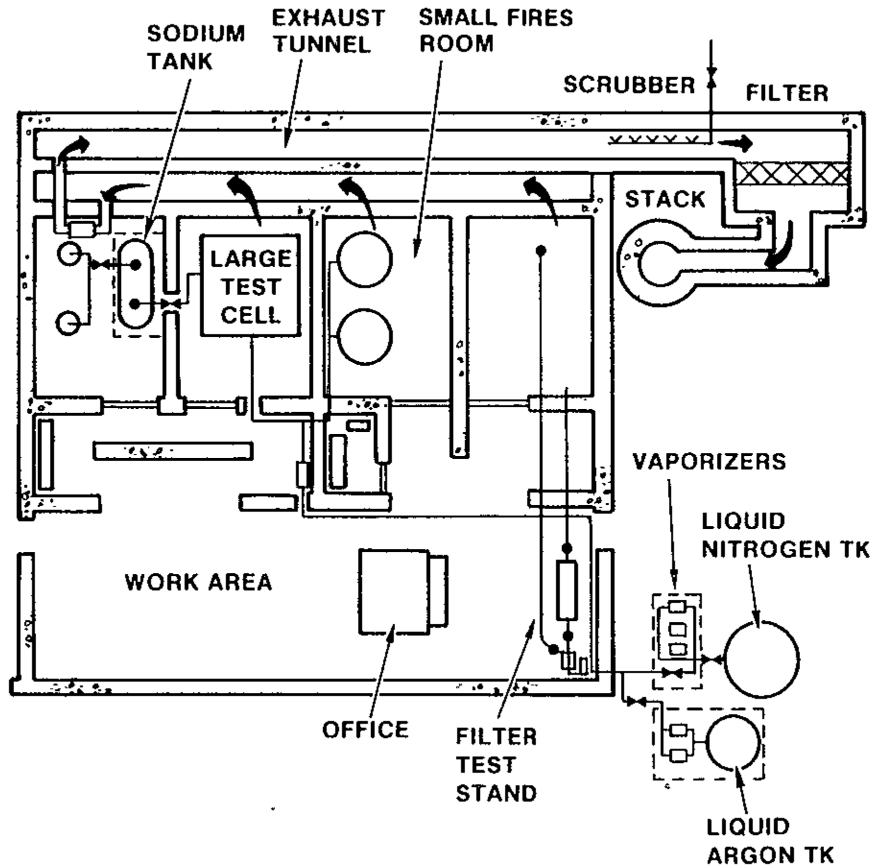

2K8509-3.28

# 105-DR/100 AREA
# LARGE SODIUM FIRE FACILITY



46° 41′ 26.046″ N
119° 32′ 04.141 W

PHOTO TAKEN 1974

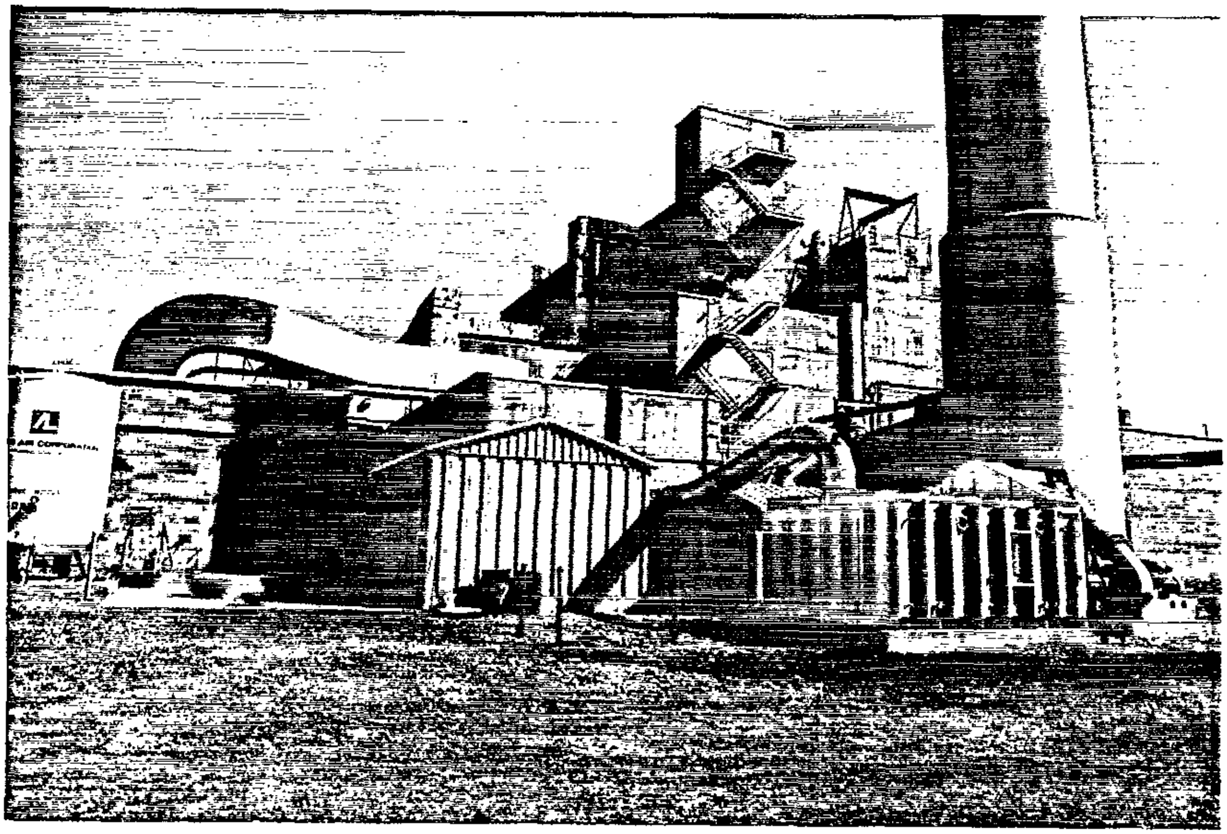



FLOOR PLAN

2K8509-3.2

# SECTION VI - PHOTOGRAPHS

LARGE SODIUM FIRE FACILITY
105-DR/100-DR AREA



46° 41' 26.046"
119° 32' 04.141"

PHOTO TAKEN 1985

FORM 3

437 MAINTENANCE AND STORAGE FACILITY (MASF)

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e. 12 characters/inch)

FORM 3

# DANGEROUS WASTE PERMIT APPLICATION

I. EPA/STATE I.D. NUMBER

W A 7 8 9 0 0 0 8 9 6 7

## FOR OFFICIAL USE ONLY

| APPLICATION APPROVED | DATE RECEIVED (mo., day, & yr.) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

MO | DAY | YR — FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

[ ] 2. NEW FACILITY *(Complete item below.)*

MO | DAY | YR 8 6 — FOR NEW FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

[ ] 1. FACILITY HAS AN INTERIM STATUS PERMIT

[ ] 2. FACILITY HAS A FINAL PERMIT

## III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER (barrel, drum, etc.) | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D80 | GALLONS OR LITERS |
| LANDFILL | D81 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D82 | *ACRES OR HECTARES* |
| OCEAN DISPOSAL | D83 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D84 | GALLONS OR LITERS |
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.) | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|---|---|---|---|
| GALLONS | G | LITERS PER DAY | V | ACRE-FEET | A |
| LITERS | L | TONS PER HOUR | D | HECTARE-METER | F |
| CUBIC YARDS | Y | METRIC TONS PER HOUR | W | ACRES | B |
| CUBIC METERS | C | GALLONS PER HOUR | E | HECTARES | Q |
| GALLONS PER DAY | U | LITERS PER HOUR | H | | |

**EXAMPLE FOR COMPLETING SECTION III** *(shown in line numbers X-1 and X-2 below)*: *A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400* gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

| LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY | LINE NUMBER | A. PROCESS CODE (from list above) | B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify) | 2. UNIT OF MEASURE (enter code) | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|---|---|---|---|---|
| X-1 | S 0 2 | 600 | G | | 5 | | | | |
| X-2 | T 0 3 | 20 | E | | 6 | | | | |
| 1 | T 0 1 | 20 | V | | 7 | | | | |
| 2 | | | | | 8 | | | | |
| 3 | | | | | 9 | | | | |
| 4 | | | | | 10 | | | | |

Continued from the front.

## III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

## IV. DESCRIPTION OF DANGEROUS WASTES

A. **DANGEROUS WASTE NUMBER** — Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste(s) that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES.

**For listed dangerous waste:** For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

**For non—listed dangerous wastes:** For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed dangerous wastes that possess that characteristic or toxic contaminant.

**Note:** Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

**NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER** — Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

**EXAMPLE FOR COMPLETING SECTION IV** *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| LINE NO. | A. DANGEROUS WASTE NO. *(enter code)* | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE *(enter code)* | D. PROCESSES 1. PROCESS CODES *(enter)* | | | | D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))* |
|---|---|---|---|---|---|---|---|---|
| X-1 | K 0 5 4 | 900 | P | T 0 3 | D 8 0 | | | |
| X-2 | D 0 0 2 | 400 | P | T 0 3 | D 8 0 | | | |
| X-3 | D 0 0 1 | 100 | P | T 0 3 | D 8 0 | | | |
| X-4 | D 0 0 2 | | | T 0 3 | D 8 0 | | | included with above |

 CONTINUE ON PAGE 3

Continued from page 2
NOTE Photocopy this page before completing if you have more than 26 wastes to list

I.D. NUMBER (enter from page 1)
WA7890008967

## IV. DESCRIPTION OF DANGEROUS WASTES (continued)

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|
| 1 | D001 | 5000 | | T01 | |
| 2 | D003 | Included with above | | | |
| 3 | | | | | |
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Continued from the front

## IV. DESCRIPTION OF DANGEROUS WASTES (continued)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

## V. FACILITY DRAWING

See Section V in the following pages

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

## VI. PHOTOGRAPHS

See Section VI in the following pages

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

## VII. FACILITY GEOGRAPHIC LOCATION

| LATITUDE *(degrees, minutes, & seconds)* | LONGITUDE *(degrees, minutes, & seconds)* |
|---|---|
| 46 26 014 | 119 21 034 |

## VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| | | | |

## IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |

## X. OPERATOR CERTIFICATION

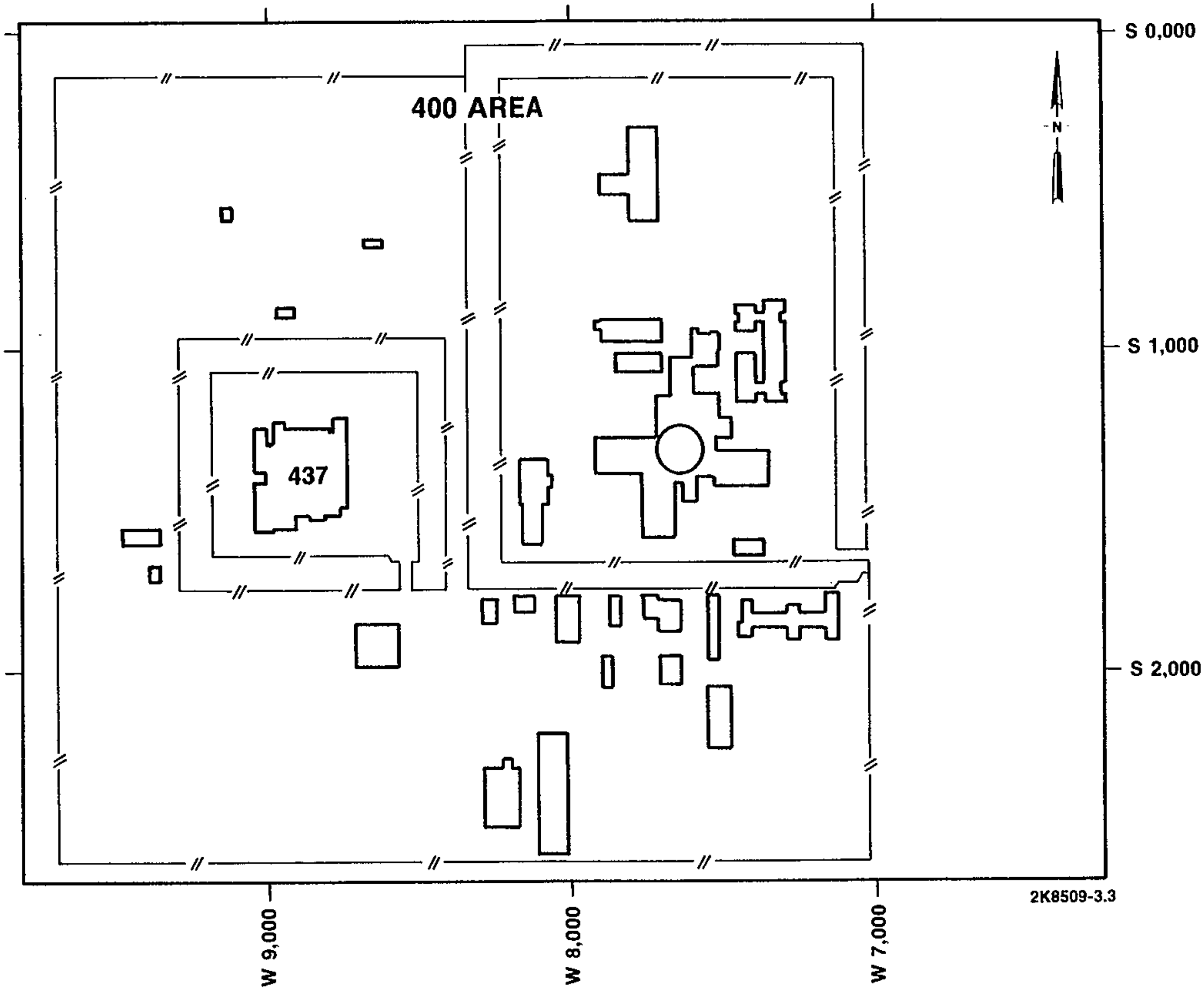
*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |

 CONTINUE ON PAGE 5

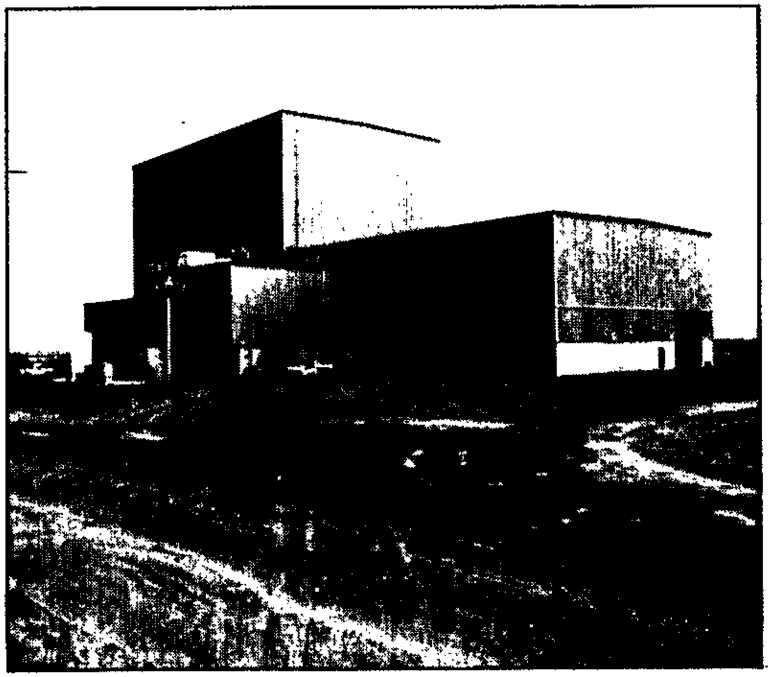
# SECTION V - FACILITY DRAWINGS

# 437/400 AREA
# MAINTENANCE AND STORAGE FACILITY (MASF)



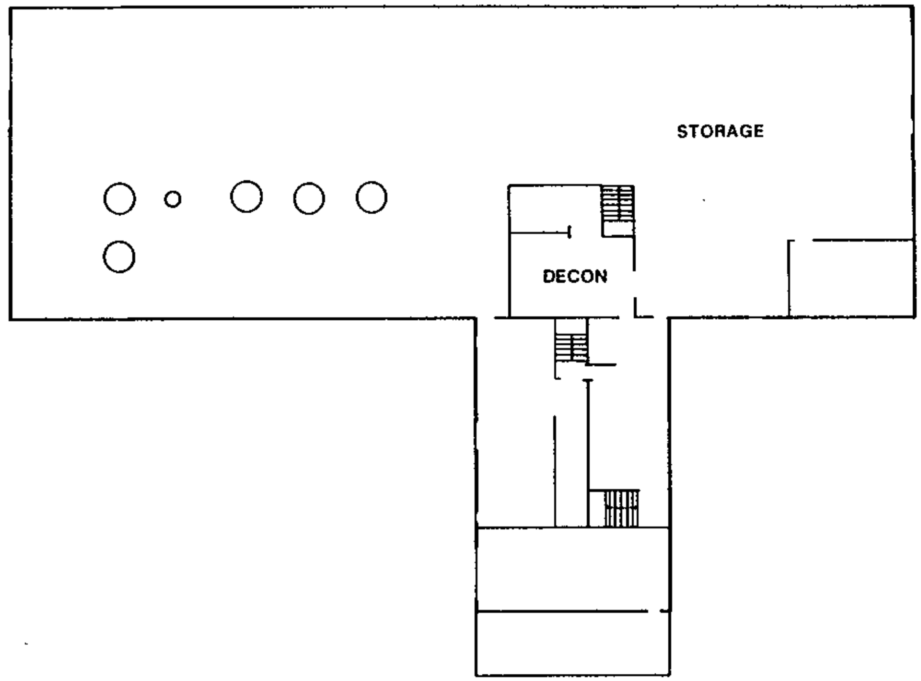

2K8509-3.3

# 437/400 AREA
# MAINTENANCE AND STORAGE FACILITY



46° 26′ 14″
119° 21′ 34″

PHOTO TAKEN 1985

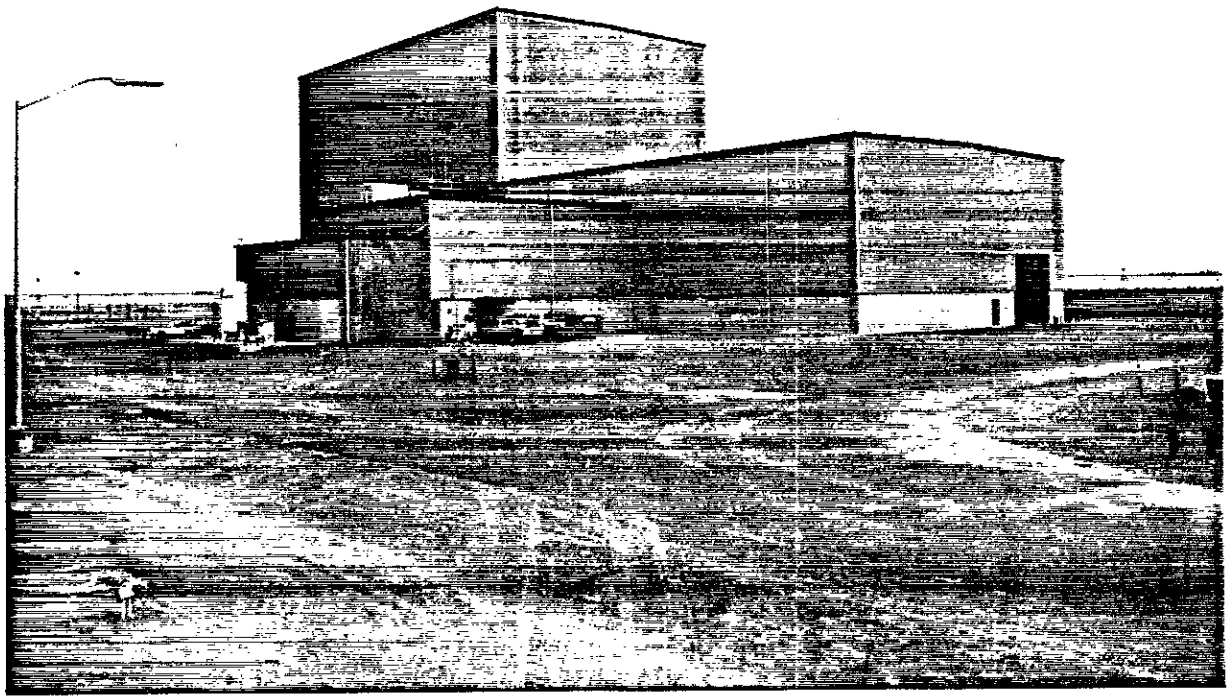



437 BUILDING

2K8509-3.32

# SECTION VI - PHOTOGRAPHS

MAINTENANCE AND
STORAGE FACILITY (MASF)
437/400 AREA



46° 26' 14"
119° 21' 34"

PHOTO TAKEN 1985

# FORM 3

# 324 SODIUM REMOVAL PILOT PLANT

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e. 12 characters/inch)

FORM **3**

# DANGEROUS WASTE PERMIT APPLICATION

**I. EPA/STATE I.D. NUMBER**

W A 7 8 9 0 0 0 8 9 6 7

**FOR OFFICIAL USE ONLY**

| APPLICATION APPROVED | DATE RECEIVED (mo., day, & yr.) | COMMENTS |
|---|---|---|
| | | |

## II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

| MO. | DAY | YR. | |
|---|---|---|---|
| | | 79 | FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)* |

| MO. | DAY | YR. | |
|---|---|---|---|
| | | | FOR NEW FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR IS EXPECTED TO BEGIN |

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

[ ] 1. FACILITY HAS AN INTERIM STATUS PERMIT

[ ] 2. FACILITY HAS A FINAL PERMIT

## III. PROCESSES — CODES AND DESIGN CAPACITIES

**A. PROCESS CODE** — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

**B. PROCESS DESIGN CAPACITY** — For each code entered in column A enter the capacity of the process.
1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

| PROCESS | PROCESS CODE | APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY |
|---|---|---|
| **Storage:** | | |
| CONTAINER (barrel, drum, etc.) | S01 | GALLONS OR LITERS |
| TANK | S02 | GALLONS OR LITERS |
| WASTE PILE | S03 | CUBIC YARDS OR CUBIC METERS |
| SURFACE IMPOUNDMENT | S04 | GALLONS OR LITERS |
| **Disposal:** | | |
| INJECTION WELL | D80 | GALLONS OR LITERS |
| LANDFILL | D81 | ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER |
| LAND APPLICATION | D82 | *ACRES OR HECTARES* |
| OCEAN DISPOSAL | D83 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | D84 | GALLONS OR LITERS |
| **Treatment:** | | |
| TANK | T01 | GALLONS PER DAY OR LITERS PER DAY |
| SURFACE IMPOUNDMENT | T02 | GALLONS PER DAY OR LITERS PER DAY |
| INCINERATOR | T03 | TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR |
| OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.) | T04 | GALLONS PER DAY OR LITERS PER DAY |

| UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE | UNIT OF MEASURE | UNIT OF MEASURE CODE |
|---|---|---|---|---|---|
| GALLONS | G | LITERS PER DAY | V | ACRE-FEET | A |
| LITERS | L | TONS PER HOUR | D | HECTARE-METER | F |
| CUBIC YARDS | Y | METRIC TONS PER HOUR | W | ACRES | B |
| CUBIC METERS | C | GALLONS PER HOUR | E | HECTARES | Q |
| GALLONS PER DAY | U | LITERS PER HOUR | H | | |

**EXAMPLE FOR COMPLETING SECTION III** *(shown in line numbers X-1 and X-2 below)*: *A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400* gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

| LINE NUMBER | A. PROCESS CODE *(from list above)* | B.1. AMOUNT *(specify)* | B.2. UNIT OF MEASURE *(enter code)* | FOR OFFICIAL USE ONLY | LINE NUMBER | A. PROCESS CODE *(from list above)* | B.1. AMOUNT *(specify)* | B.2. UNIT OF MEASURE *(enter code)* | FOR OFFICIAL USE ONLY |
|---|---|---|---|---|---|---|---|---|---|
| X-1 | S02 | 600 | G | | 5 | | | | |
| X-2 | T03 | 20 | E | | 6 | | | | |
| 1 | T01 | 20 | V | | 7 | | | | |
| 2 | | | | | 8 | | | | |
| 3 | | | | | 9 | | | | |
| 4 | | | | | 10 | | | | |

Continued from the front.

## III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

## IV. DESCRIPTION OF DANGEROUS WASTES

A. **DANGEROUS WASTE NUMBER** — Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non—listed waste(s) that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|---|---|---|---|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non—listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER — Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

**EXAMPLE FOR COMPLETING SECTION IV** *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| LINE NO. | A. DANGEROUS WASTE NO. *(enter code)* | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE *(enter code)* | D. PROCESSES 1. PROCESS CODES *(enter)* | | | | 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))* |
|---|---|---|---|---|---|---|---|---|
| X-1 | K054 | 900 | P | T03 | D80 | | | |
| X-2 | D002 | 400 | P | T03 | D80 | | | |
| X-3 | D001 | 100 | P | T03 | D80 | | | |
| X-4 | D002 | | | T03 | D80 | | | included with above |


CONTINUE ON PAGE

Continued from page 2

NOTE Photocopy this page before completing if you have more than 26 wastes to list

| I.D. NUMBER (enter from page 1) |
|---|
| W A 7 8 9 0 0 0 8 9 6 7 |

## IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

| LINE NO. | A. DANGEROUS WASTE NO. (enter code) | B. ESTIMATED ANNUAL QUANTITY OF WASTE | C. UNIT OF MEASURE (enter code) | D. PROCESSES 1. PROCESS CODES (enter) | D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1)) |
|---|---|---|---|---|---|
| 1 | D 0 0 1 | 7000 | K | T 0 1 | |
| 2 | D 0 0 3 | Included with above | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |
| 21 | | | | | |
| 22 | | | | | |
| 23 | | | | | |
| 24 | | | | | |
| 25 | | | | | |
| 26 | | | | | |

continued from the front.

## IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

## V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

## VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

## VII. FACILITY GEOGRAPHIC LOCATION

| LATITUDE *(degrees, minutes, & seconds)* | LONGITUDE *(degrees, minutes, & seconds)* |
|---|---|
| 46 22 007 | 119 16 022 |

## VIII. FACILITY OWNER

[X] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

| 1. NAME OF FACILITY'S LEGAL OWNER | 2. PHONE NO. *(area code & no.)* |
|---|---|
| | |

| 3. STREET OR P.O. BOX | 4. CITY OR TOWN | 5. ST. | 6. ZIP CODE |
|---|---|---|---|
| | | | |

## IX. OWNER CERTIFICATION

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |

## X. OPERATOR CERTIFICATION

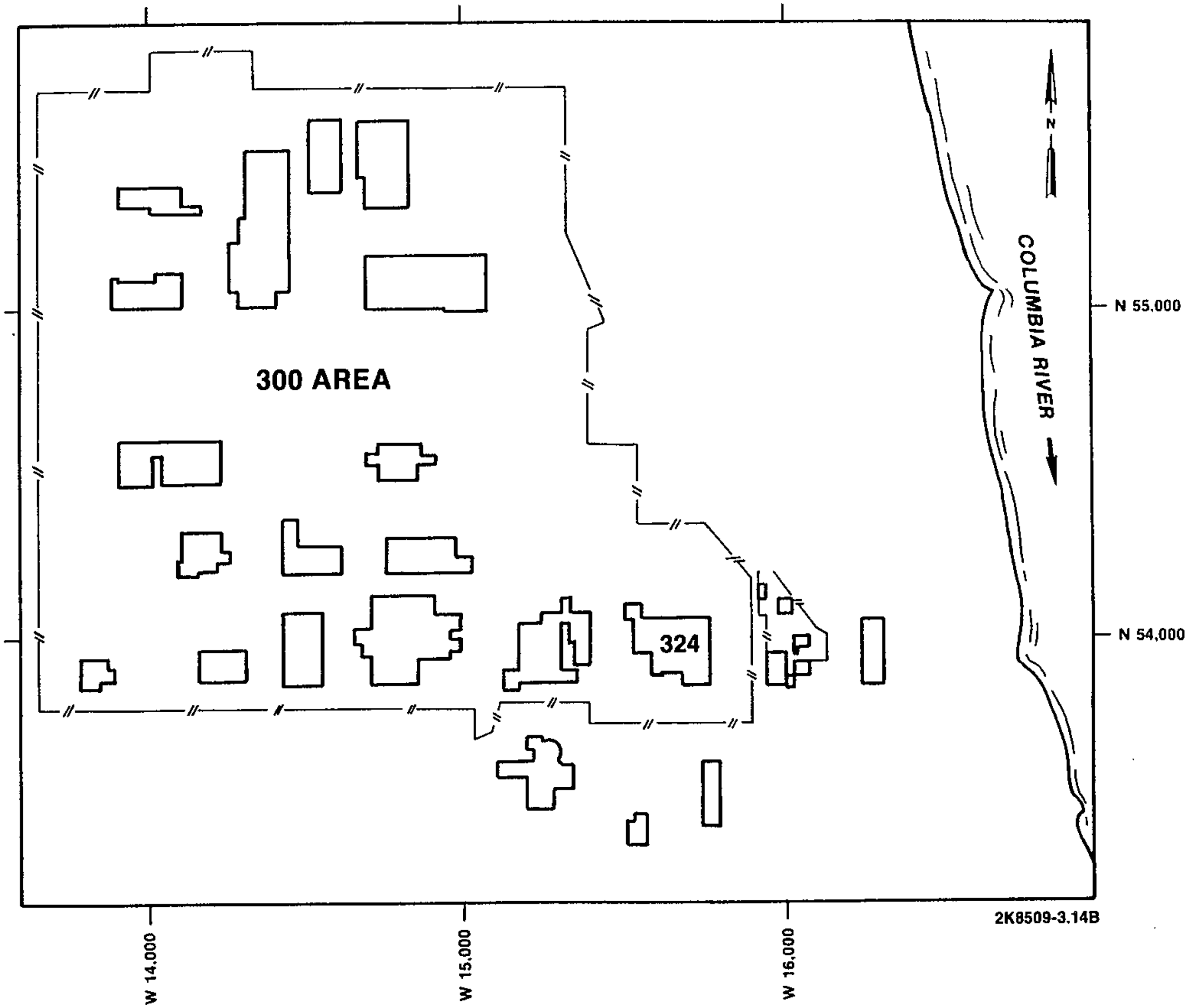
*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

| NAME *(print or type)* | SIGNATURE | DATE SIGNED |
|---|---|---|
| T.R. FITZSIMMONS, ASST. MANAGER | | |


CONTINUE ON PAGE 5

# SECTION V - FACILITY DRAWINGS

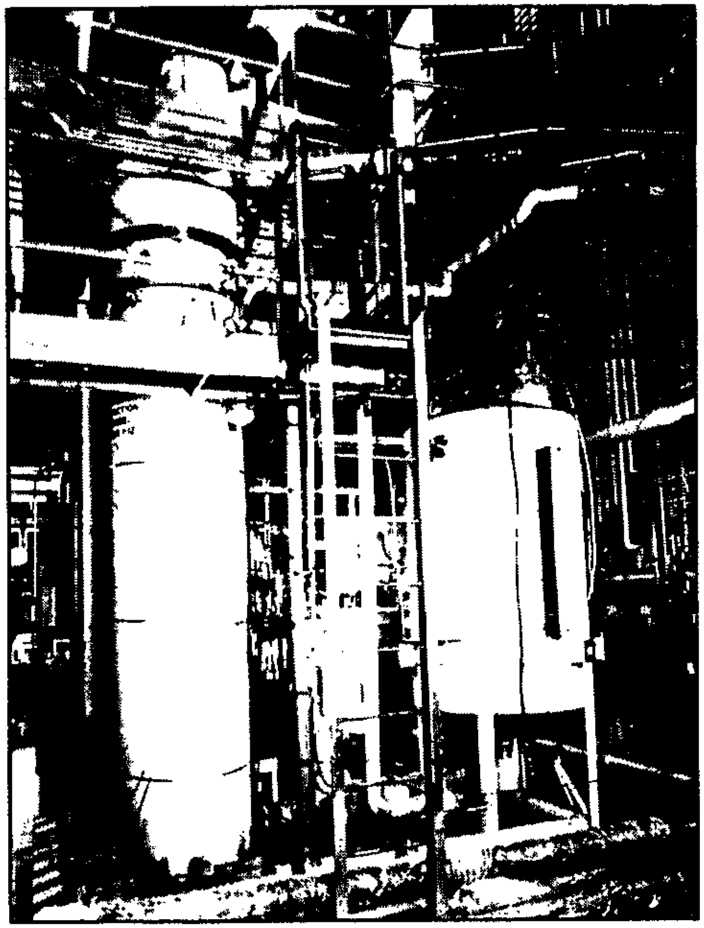
# 324/300 AREA
# SODIUM REMOVAL PILOT PLANT




2K8509-3.14B

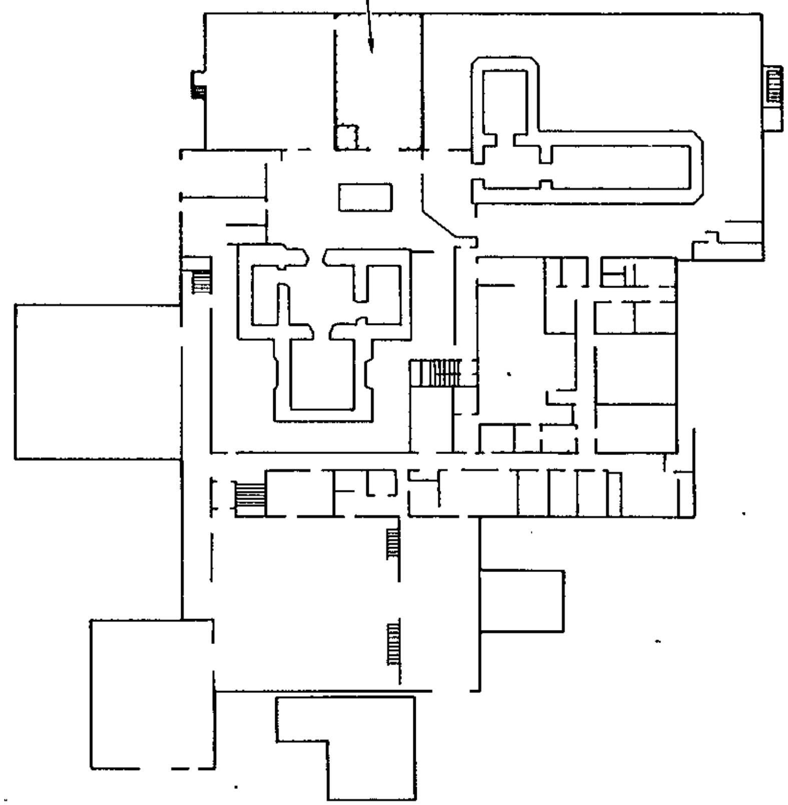
9 0 1 1 7 6 5 0 0 6 5

# 324/300 AREA
# SODIUM REMOVAL PILOT PLANT



46° 22' 0.8"
119° 16' 21"

PHOTO TAKEN 1985

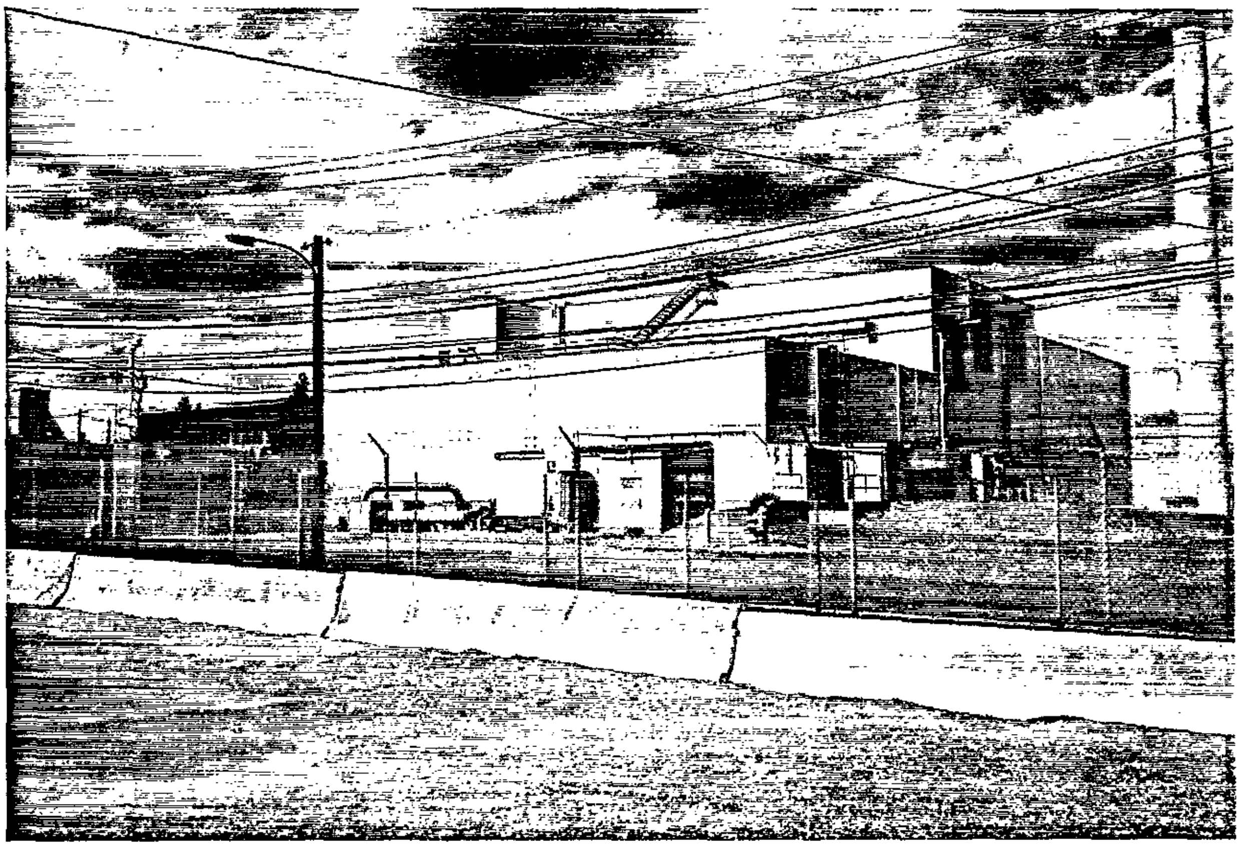



2K8509-3.24

WA7890008967

# SECTION VI - PHOTOGRAPHS

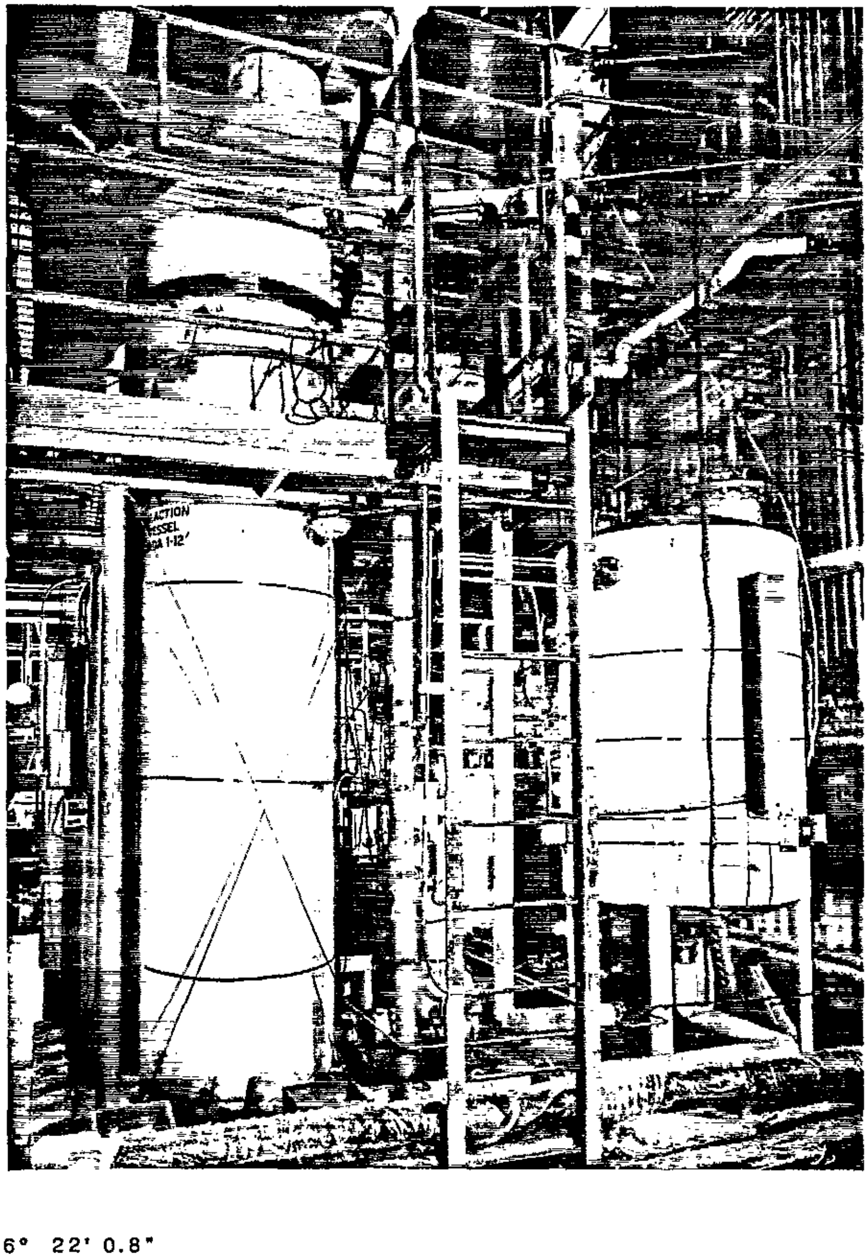
**SODIUM REMOVAL**
**PILOT PLANT**
**324/300 AREA**



46° 22′ 0.8″
119° 16′ 21″

PHOTO TAKEN 1985

# SODIUM REMOVAL
# PILOT PLANT
# 324/300 AREA



46° 22' 0.8"
119° 16' 21"

# SECTION B
# FACILITY DESCRIPTION

This section provides a general description of the hazardous waste management facility as required by 40 CFR 270.14(b) and WAC 173-303-806(4)(a)i. This description is intended to acquaint the permit application reviewer/permit writer with an overview of the facility. More complete details can be found in other parts of this permit application and in the other permit application volumes.

## B-1 GENERAL DESCRIPTION

The Hanford Site is a 570 square mile tract of semiarid land which is owned and operated by the U.S. Department of Energy. The site is located primarily west and south of the section of the Columbia River immediately north of the city of Richland, Washington (Figure B-1). In early 1943, the United States Army Corps of Engineers selected the Hanford Site as the location for reactor and chemical separation facilities for the production and purification of plutonium for possible use in nuclear weapons (Manhattan Project). A total of eight graphite-moderated reactors using Columbia River water for once-through cooling, and a new type of dual purpose reactor (N Reactor) using a recirculating water coolant and producing both plutonium and steam for electricity, were eventually built along the Columbia River. Today, only the N Reactor remains in operation.

Activities are centralized in numerically designated areas on the Hanford Site. The reactor facilities (active and decommissioned) are located along the Columbia River in what are known as the 100 Areas. The reactor fuel processing and waste management facilities are in the 200 Areas which are on a plateau about seven miles from the river. The 300 Area, just north of Richland, contains the reactor fuel manufacturing facilities and the research and development laboratories. The 400 Area, five miles northwest of the 300 Area, contains the Fast Flux Test Facility. The 1100 Area, north of Richland, contains facilities associated with maintenance and transportation functions for the Hanford Site. Administrative buildings and other research and development laboratories are found in the 3000 Area, north of Richland. The 600 Area, two miles southeast of the 200 East Area, contains the Nonradioactive Dangerous Waste Landfills.

This Part B volume addresses the Alkali Metal Treatment and Storage Facilities located throughout the Hanford Site. The following are the various alkali metal facilities at the Hanford Site:

- <u>221-T Containment System Test Facility (CSTF)</u> -- The CSTF is a research laboratory located in the 221-T building of the 200-W Area that is used to perform experiments with alkali metal compounds. A hazardous waste thermal treatment unit is located at the CSTF (T04).

- <u>Alkali Metal Treatment Facility (AMTF) 3718-F</u> -- 3718-F is a storage, treatment, and decontamination facility for handling alkali metal wastes and equipment that is contaminated with alkali metals. This facility is located in the 300 Area. The hazardous waste units include a container storage area, a treatment/ decontamination tank and a thermal treatment unit (T01, T04, S01).

- <u>Large Sodium Fire Facility (LSFF) 105-DR</u> -- The Large Sodium Fire Facility is a research laboratory located in the 100-D Area of the Hanford Site. This facility is used to conduct experiments for studying the behavior of molten alkali metals and alkali metal fires. The hazardous waste management units include a container storage area and a thermal treatment unit (T04, S01).

- <u>Maintenance and Storage Facility (MASF)</u> -- The MASF is located in the 400 Area of the Hanford Site. The hazardous waste units are a small diameter cleaning tank and a large diameter cleaning tank (T01).

- <u>324 Sodium Removal Pilot Plant (SRPP)</u> -- The 324 SRPP is located in the 300 Area of the Hanford Site. The SRPP is a small cylindrical tank that accepts contaminated components and equipment for removal of sodium (T01).

## B-2 <u>TOPOGRAPHIC MAP</u>

### B-2a <u>General Requirements</u>

The drawing in Appendix B-1 is a general overview map of the entire Hanford site property and the surrounding countryside. This figure is intended as a location map and illustrates the following:

- o The facility boundary of the Hanford Site
- o Surrounding land use including the Saddle Mountain National Wildlife Refuge and the State Game Reserve to the north and the Rattlesnake Mountain Ecological Reserve located to the west. Land east of the Site across the Columbia River is primarily farmland or a part of the Game Reserve. The surrounding land area is also shown on Figure B-1
- o Contours sufficient to show surface water flow. Because of the large facility size, contours are 20 foot spacing
- o Locations of the various areas described in Section B-1 of this document
- o Fire control facilities located on the Hanford Site
- o Locations of access roads, internal roads, railroads, and perimeter gates and barricades
- o Longitudes and Latitudes

Figure B-2 illustrates wind roses for various locations on the Hanford Site. Winds are predominately from the west.

The general layout maps for the 100-D, 200-W, 300 and 400 Areas are given in Appendix B-2. The reference drawing numbers for these areas are as follows:

- o 100-D Area -- No. H-1-15449
- o 200-W Area -- No. H-2-34762
- o 300 Area -- No. H-3-53734
- o 400 Area -- No. H-4-156161

These layout drawings show all major raods, railroad tracks, perimeter fences, buildings, structures, access gates, and hazardous waste management units of the respective areas.

B-2b <u>Additional Topographic Requirements for Land Disposal Facilities</u>

There are no land storage, treatment or disposal facilities at the Alkali Metal facilities; therefore, this section is not applicable.

## B-3 LOCATION INFORMATION

### B-3a Seismic Consideration

The DOE Hanford Site is not located within any of the political jurisdictions identified in Appendix VI of 40 CFR 264 and WAC 173-303-420(3)(C). Thus, further demonstration of compliance with the seismic standard of 40 CFR 264.18 and WAC 173-303-806(xi)(B) is not required.

### B-3b Floodplain Standard

The Army Corp of Engineers has calculated the probable maximum flood based on the upper limit of precipitation falling on a drainage area and other hydrologic factors such as antecedent moisture conditions, snowmelt, and tributary conditions that could lead to maximum runoff. The probable maximum flood for the Columbia River below Priest Rapids Dam has been calculated to be 1.4 million cubic feet per second (COE, 1951, 1969). The floodplain associated with the probable maximum flood is shown in Figure B-3. The inundated area shown in Figure B-3 is greater than that which would be inundated during a 100 year flood. The waste management area covered by this volume is located well above the floodplain.

#### B-3b(1) Demonstration of Compliance

The alkali metal facilities of the Hanford Site are not located within the 100 year floodplain and there are no plans for establishing units in the floodplain. A further demonstration of compliance is therefore not applicable for this Part B permit volume. Information for other hazardous waste units is given in other Part B volumes.

## B-4 TRAFFIC INFORMATION

Roadways inside the facility are restricted to authorized personnel and cannot be accessed by the general public. The nearest public highway, State Highway 240, is approximately four miles from the patrolled site areas. The majority of traffic inside the facility consists of light duty vehicles and buses used to transport the employees to the various operations sites within the facility.

Figure B-4 shows the major roads throughout the Hanford Site. These roads are classified as either primary or secondary routes. The primary routes include Routes 4S, 10, 4N and the portion of 11A east of route 4N. All other roads are secondary routes. The primary routes are constructed of bituminous asphalt (usually two inches thick, but the thickness of the asphalt layer will vary with each road) with an underlying aggregate base. The secondary routes are constructed of layers of an oil and rock mixture with an underlying aggregate base. The aggregate base consists of various types and sizes of rock found on site. Currently, no load-bearing capacities of these roads are available; however, past knowledge indicates that the roads will sufficiently support all vehicles that will transport hazardous waste.

The 100-D area is a controlled area of approximately four square kilometers located in the north part of the Hanford Site adjacent to the Columbia River. It is located near river mile 387.

All roads leading to the 100-D, DR Area are private roads belonging to the U.S. DOE. Use of these roads is restricted to vehicles operated by the U.S. DOE, its contractors and vendors, and private vehicles belonging to Hanford employees. The actual 100-D, DR area is enclosed by a security fence. Because the nuclear reactors in the area have been closed and had their fuel removed, there is no longer a guard force at the area. The gate to the area is open during the day shift and locked on the off shifts by the landlord of the area. Approximately 100 to 130 DOE contractor personnel work in the 100 Area.

The 200 West Area is a controlled area of approximately 8.2 square kilometers located near the center of the Hanford Sire, about eight kilometers from the Columbia River and about 11 kilometers from the nearest Site boundary. The nearest residence is approximately 16 kilometers to the northwest and the nearest city or town is Richland, Washington, which is approximately 34 kilometers southeast.

All roads leading to the 200 West Area are private roads belonging to the U.S. DOE. Use of these roads is restricted to vehicles operated by the U.S.DOE, its contractors and vendors, and private vehicles belonging to Hanford employees. Actual access to the 200 West Area requires driving past a guard station where identification badges and shipping documents are checked. The roads leading to the 200 West area and within the area are two-lane primary roads with asphalt paving.

The 300 Area is a controlled area of approximately 1.6 square kilometers located near the southeast corner of the Hanford Site, between river miles 343 and 345. It is bounded on the east by the Columbia River and on the west by the Hanford Highway Route 4 south. The southern site boundary is about 1.7 kilometers north of the Richland city limits and about 11 kilometers north of the city center.

Access to the 300 Area consists of two roads from the south and one from the north. The two routes from the south are Hanford Highway 4 south which is an extension of the Richland city street of Stevens Drive and an extension of the Richland city street of George Washington Way. The public can approach the 300 area on both routes from the south. The public cannot enter the 300 area because of guard stations established to control access to the area. The approach from the north is Hanford Highway 4. The public has access to the highway but is prevented from entering the 300 Area by the guard stations.

The 400 area is located at an elevation of about 170 meters above mean sea level. The land around the site slopes gently away to the south and east toward the Columbia and Yakima Rivers. The site is devoid of prominent topographic features.

The principal activity in the 400 Area is breeder reactor research carried on at the FFTF and associated facilities.

The 400 Area can be approached either from the north or the south using Hanford Highway Route 4. Route 4 is accessible to the public. A short stretch of road connects the 400 Area to Route 4. Actual access to the 400 Area is controlled by guard stations where identification must be shown. Only U.S. DOE vehicles are allowed in the 400 Area.

# SURROUNDING LAND USE

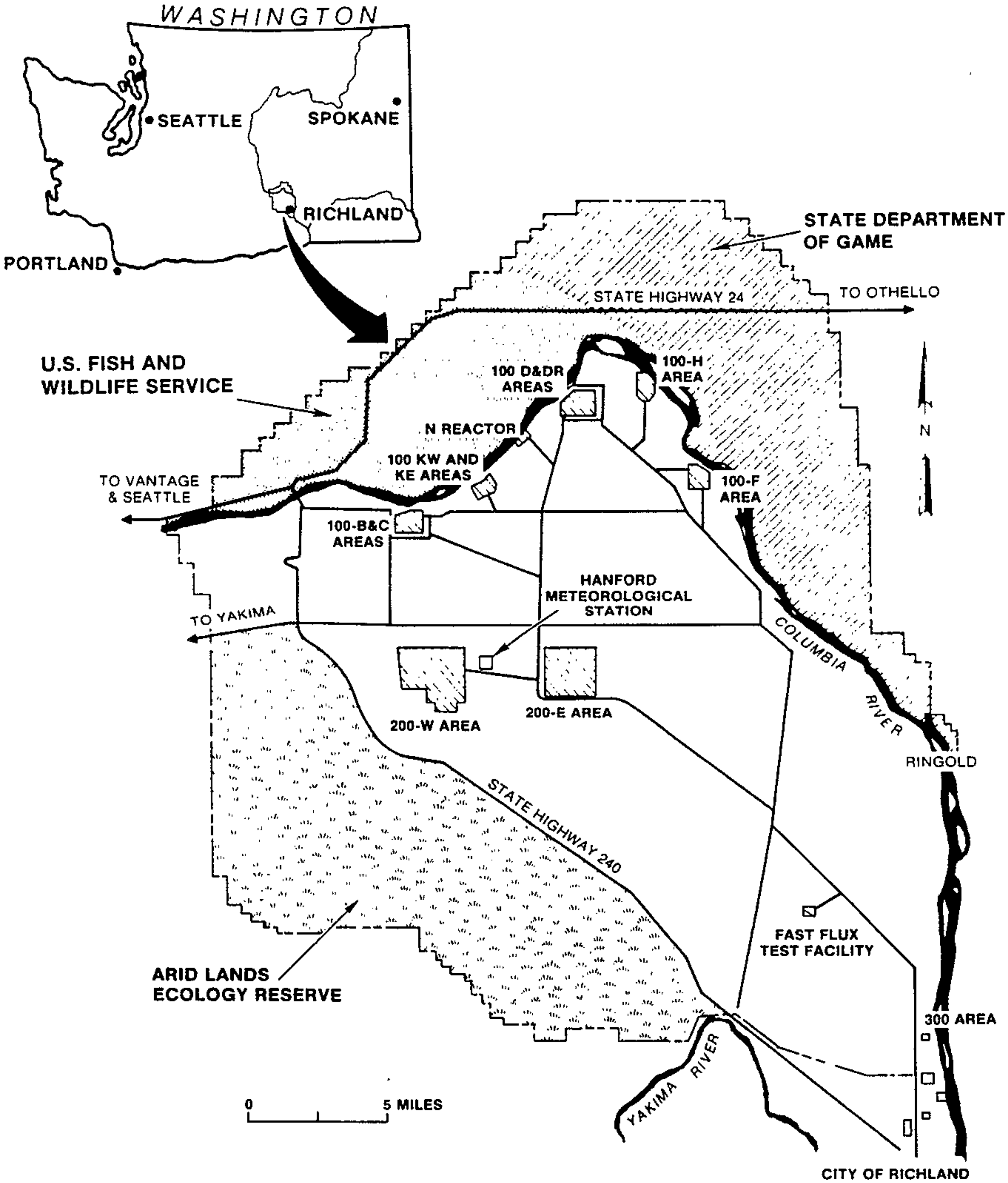



FIGURE B-1. SURROUNDING LAND USE

2K8509-3.23

# WIND ROSE FOR THE HANFORD TELEMETRY NETWORK

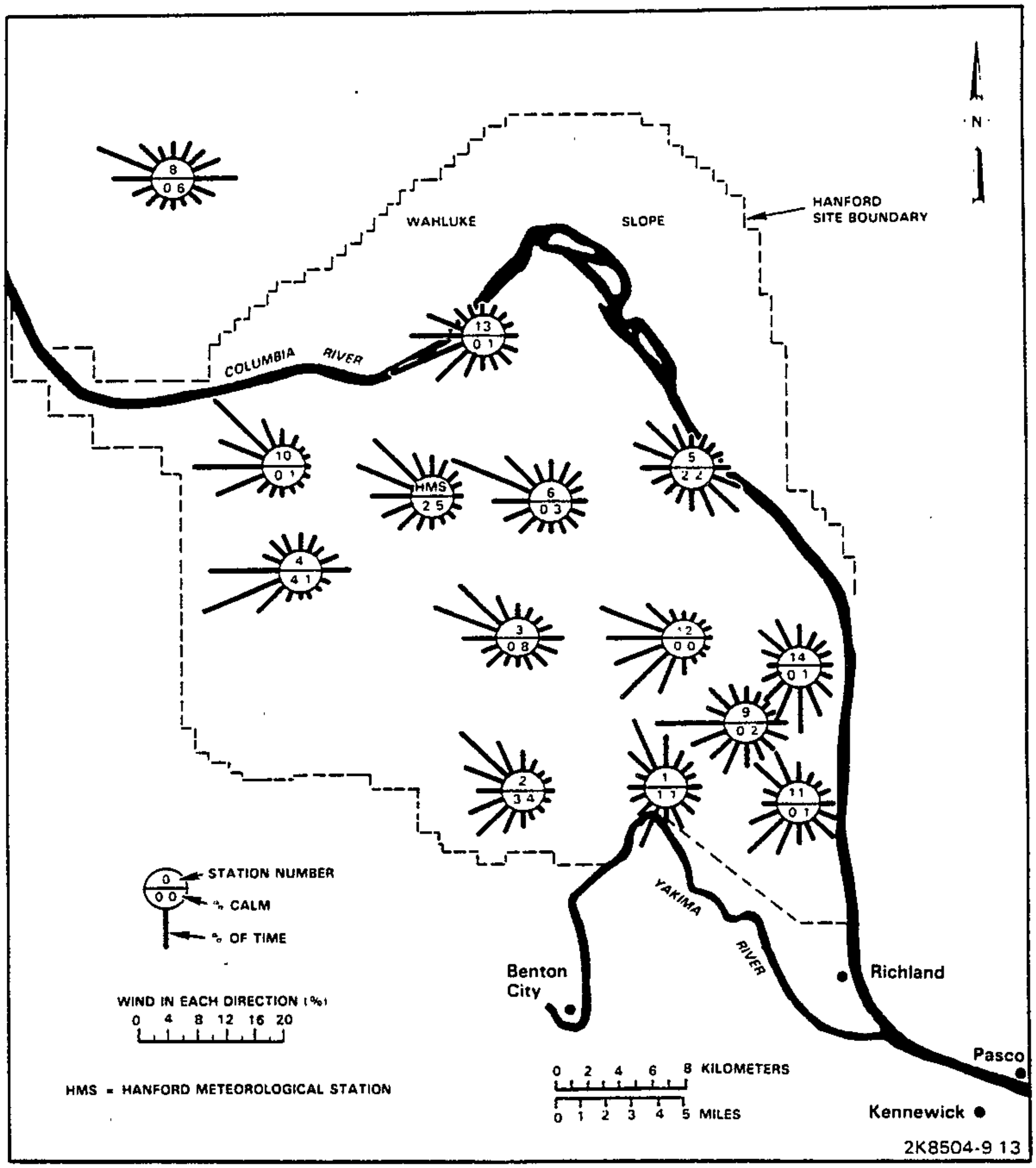



FIGURE B-2. WIND ROSE FOR THE HANFORD TELEMETRY NETWORK

# FLOODED AREA FOR THE PROBABLE MAXIMUM FLOOD

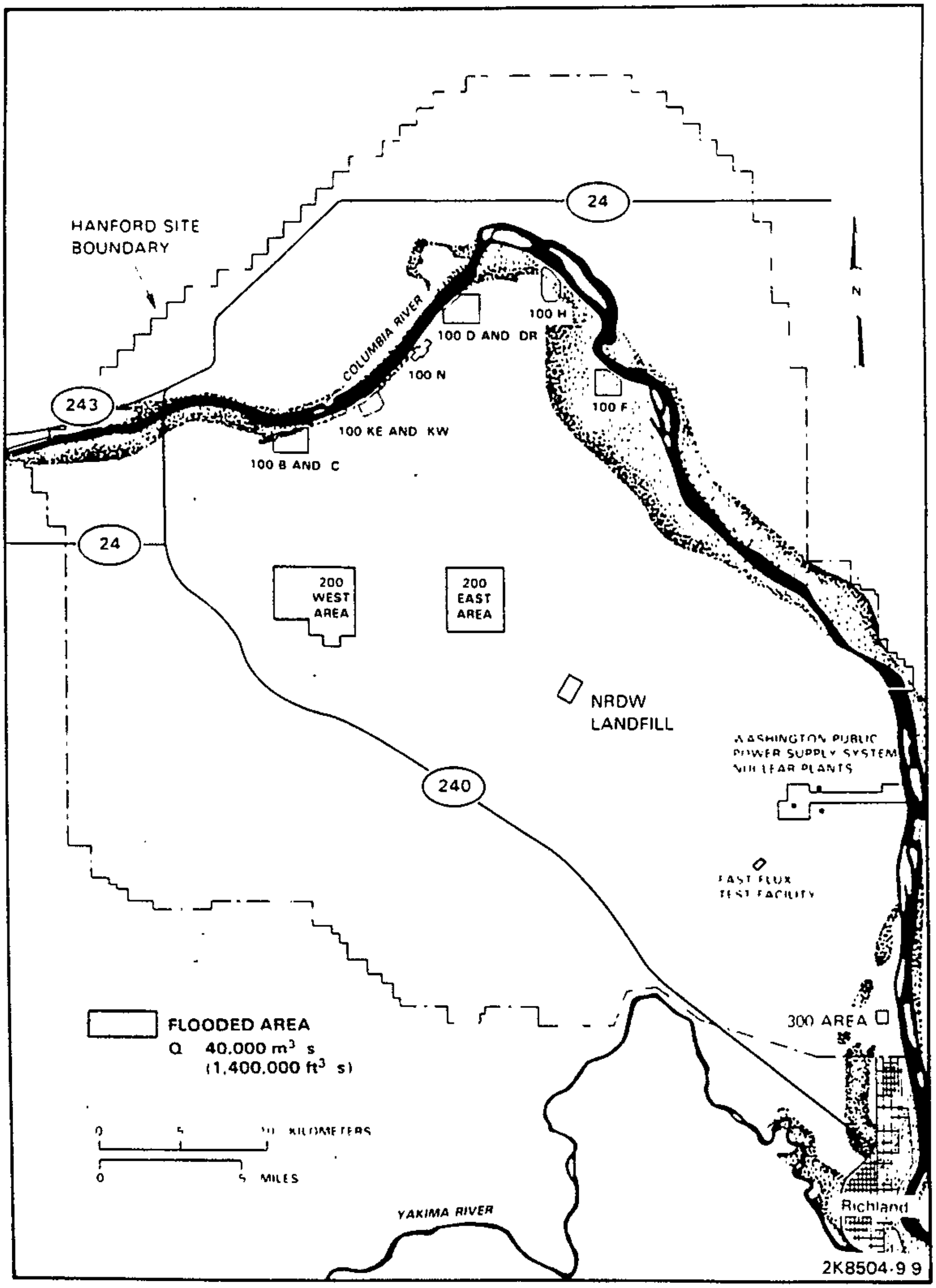



FIGURE B-3. FLOODED AREA FOR THE PROBABLE MAXIMUM FLOOD

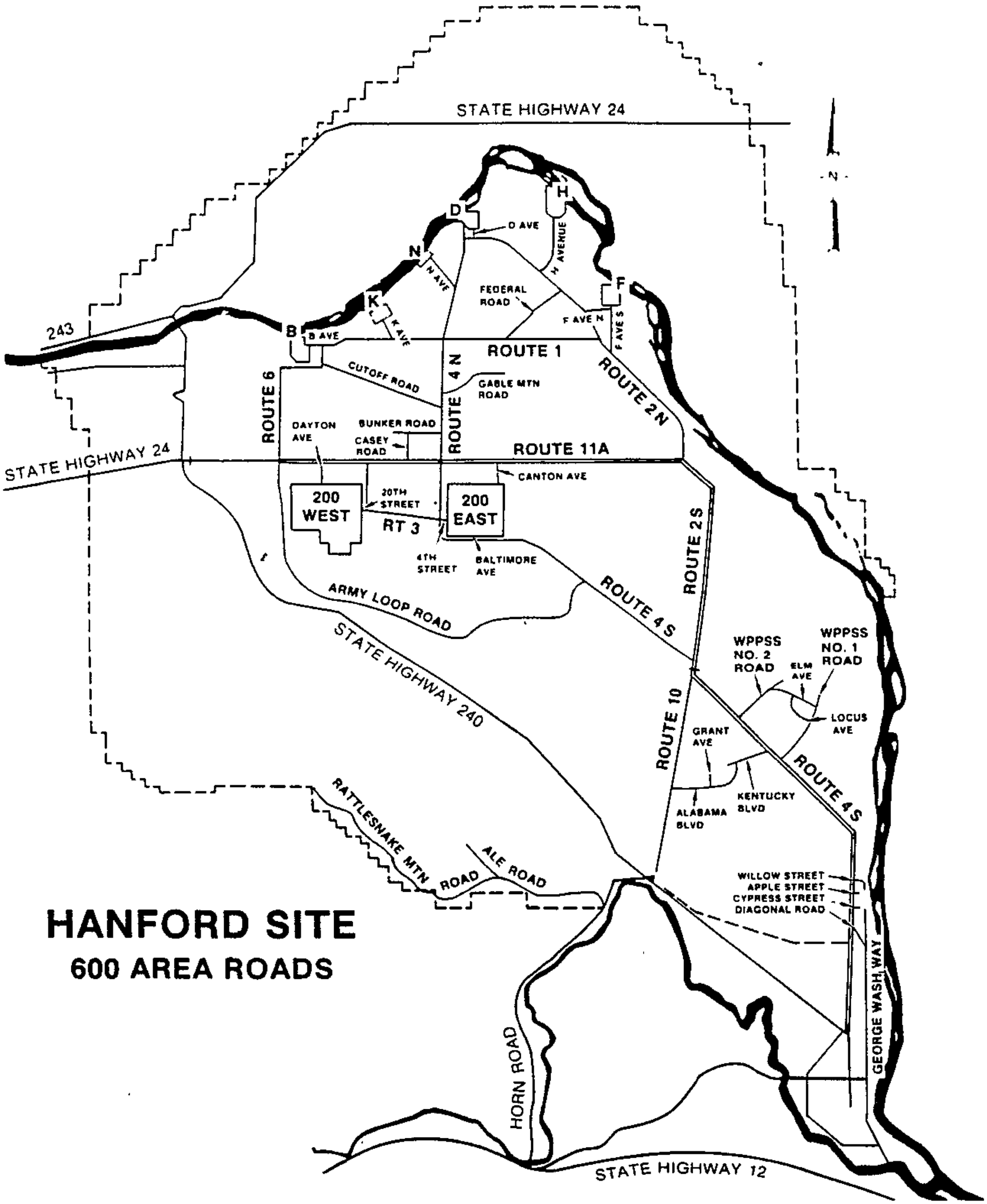
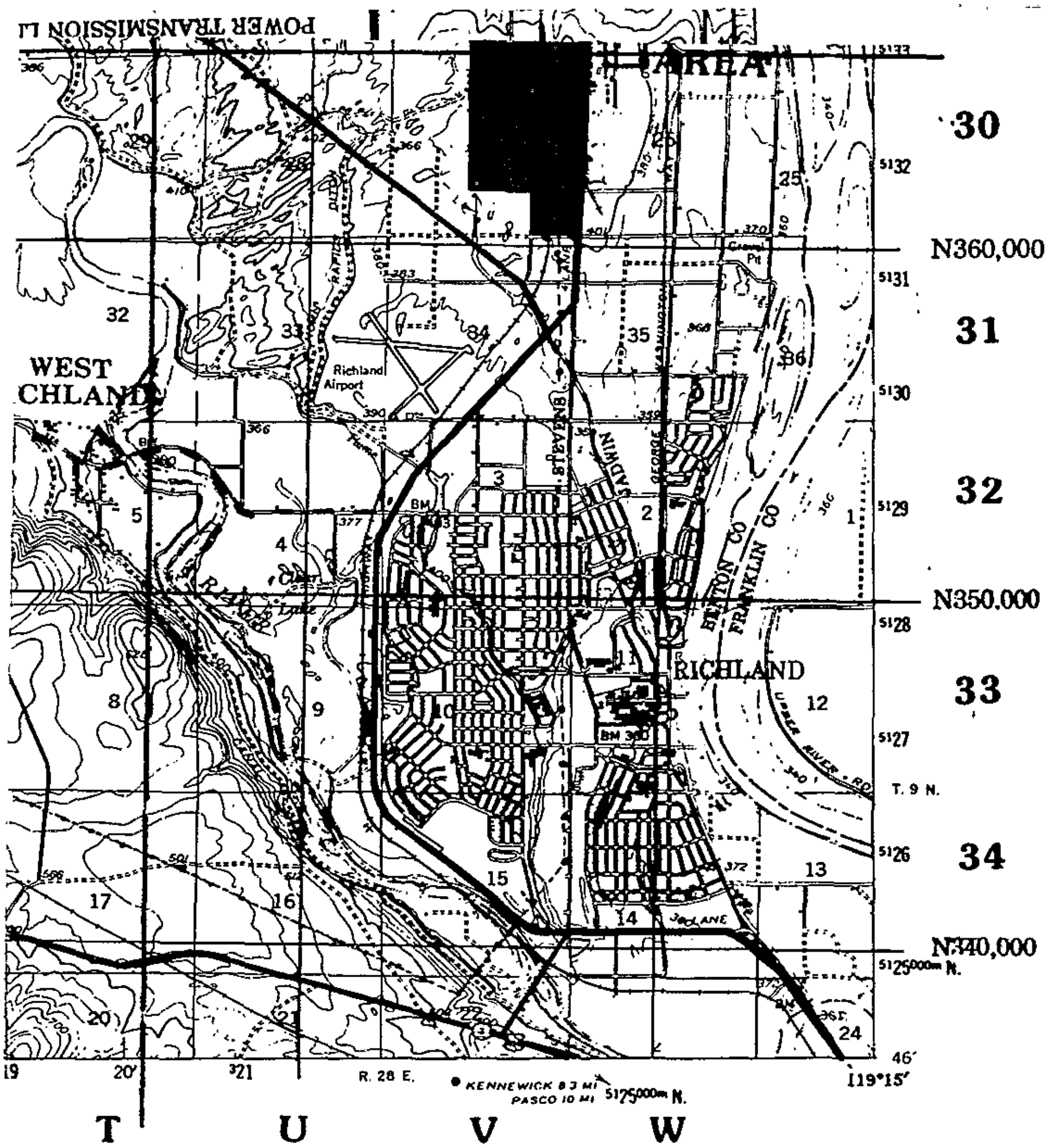



FIGURE B-4. HANFORD SITE MAJOR ROADS

APPENDIX B-1

HANFORD SITE MAP




| DRAWING APPROVALS | DATE | |
|---|---|---|
| APPD FOR QUALITY ASSURANCE | | **U. S. Department of Energy** Richland Operations Office |
| APPD | | M **Rockwell Hanford Operations** Richland, Washington 99352 |
| APPD R. C. Maltell | 1/18/85 | # HANFORD SITE MAP |
| APPD | | |
| RESPONSIBLE ENGINEER R. MARTELL | 1/18/85 | |
| DRAFTING APPD R. C. Maltell | 2/8/85 | |
| CHECKED S. Camen | 1/18/85 | SCALE AS SHOWN \| BLDG NO 600 GEN \| INDEX NO. 0100 |
| DRAWN J. Cand | 1/18/85 | |
| CLASSIFICATION NONE | BY NOT REQ'D | DRAWING NO H-6-951 \| SHEET NO. 1 \| SHEETS 1 |

# APPENDIX B-2

## DRAWING NOS. H-1-15449, H-2-34762, H-3-53734, H-4-156161

RAILROADS

FENCE

WATER TOWERS

DRAWER #14

| | | | |
|---|---|---|---|
| APPD. FOR CONFORMANCE WITH DESIGN CRITERIA BY FOR | DATE | U. S. ATOMIC ENERGY COMMISSION RICHLAND OPERATIONS OFFICE | |
| APPD | | PACIFIC NORTHWEST LABORATORY OPERATED BY BATTELLE MEMORIAL INSTITUTE | |
| APPD | | SIMPLIFIED MAP | |
| ENGR V.P. EPPERLY | | | |
| DFTG APPD J.W. Sadler | 1/9/75 | | |
| CHECKED | | | |
| DRAWN Romine | 1/8/75 | | |
| SCALE SHOWN | | | |
| CLASSIFIED BY NOT REQD | DATE | BLDG. NO. 100 D, DR GEN | INDEX NO. 0101 |
| CLASSIFICATION NONE | | DWG NO. H-1-15449 | SHEET NO. 1 / NO OF SHTS 1 |

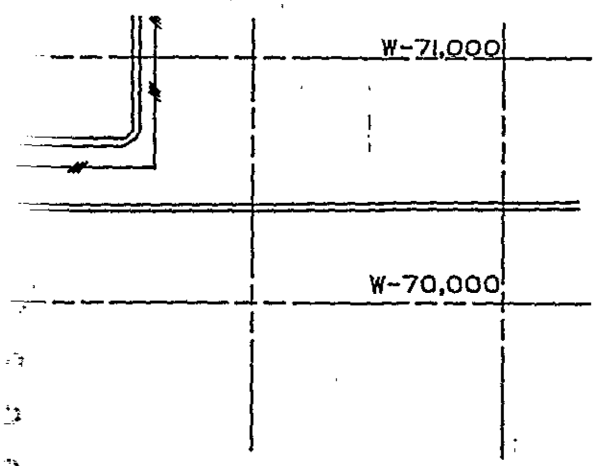
| ISSUE NO. | DESCRIPTION | DATE | REV NO. / LAST REV |
|---|---|---|---|
| | | | 0 |

C

B

A

3 2 1




B

200 WEST AREA
SITE PLAN

A

EXTRACTED FROM
H-2-34762 SH 1

| 3 | 2 KEHCAD | 1 |
|---|---|---|

0 100 200 300 400 500

SCALE 1" = 200'

| BY-DATE | FOR | BY-DATE | FOR | CHK. BY DATE | REV. BY DATE | DESCRIPTION | REV. NO. |
|---|---|---|---|---|---|---|---|
| APVD. | | APVD. | | | | | |

REVISIONS

| COMMENT PRINT ISSUE NO. | CHECK PRINT ISSUE NO. 2 9/9/85 | LAST REV. |
|---|---|---|

DRAWING STATUS

| | |
|---|---|
| APVD. FOR CONFORMANCE WITH DESIGN CRITERIA BY FOR | DATE |
| Q.A. APVD. | |
| APVD. | |
| APVD. | |
| ENGR G WOODCOCK | 8/85 |
| DFTG. APVD. | |
| CHECK | |
| DRAWN O L OLSON 7/85 | |
| SCALE NOTED | |
| CLASSIFICATION NONE | |

# U.S. DEPARTMENT OF ENERGY

HANFORD ENGINEERING DEVELOPMENT LABORATORY
WESTINGHOUSE HANFORD COMPANY

# 300 AREA GENERAL LAYOUT

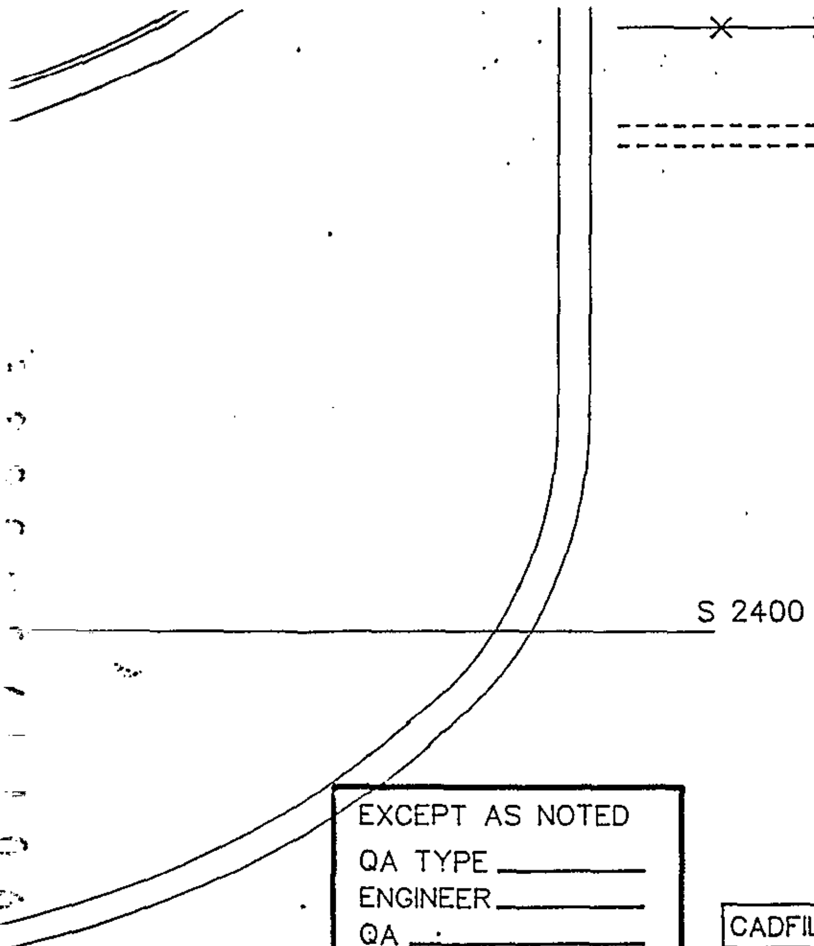
| BLDG. NO. 300G | INDEX NO. 0109 | | |
|---|---|---|---|
| DWG. NO. H-3-53734 | | SHT. NO 1 | NO. SHTS 1 |

CADFILE:003ØØSTAGE

B

A

3 2 1




ALARM BARRIER

ELECTRICAL SUBSTATION

UNPAVED ROAD

T–17,18,19,20,& 21 ARE UNDERGROUND FUEL STORAGE TANKS

ALL OTHER T AND H NUMBERS ARE TRAILERS

SEP 1 8 1985

CADFILE:AW400AREAB

EXCEPT AS NOTED
QA TYPE ______
ENGINEER ______
QA ______
APVD. FOR QA TYPE ONLY

| | | | | |
|---|---|---|---|---|
| & UPDATED | 4 | QA APVD. | | |
| & UPDATED | 3 | APVD. | | |
| & UPDATED | 2 | APVD. R.C.INGERSOLL | 2/29/83 | |
| ROADWAYS | 1 | ENGR. | | |
| SCRIPTION | REV. NO. | DFTG. APVD. | | |
| | | CHECK W. STARKEY | 11/83 | |
| | | DRAWN A. C. WINANS | 11/83 | |

APVD. FOR CONFORMANCE WITH DESIGN CRITERIA — BY — FOR — DATE

U.S. DEPARTMENT OF ENERGY

HANFORD ENGINEERING DEVELOPMENT LABORATORY
WESTINGHOUSE HANFORD COMPANY

# 400 AREA LAYOUT MAP 11/84

SCALE 1" = 120' | BLDG. NO. 400GEN | INDEX NO. 0109

NO. | LAST REV. 4 | CLASSIFICATION NONE | DWG. NO. H–4–156161 | SHT. NO. 1 | NO. SHTS 1

3 2 1

B

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# SECTION C
# WASTE CHARACTERISTICS

This section describes the chemical and physical characteristics of the dangerous wastes stored and treated at the 3718F, 105DR, 221T, 437, and 324 Facilities. The only wastes to be treated and stored are alkali metal and alkali metal alloy wastes and other wastes which are designated dangerous wastes due to their ignitable or reactive nature.

## C-1 CHEMICAL AND PHYSICAL ANALYSES

Dangerous wastes at 3718F and 105DR Facilities are stored in 55-gallon drums or other smaller containers. The maximum storage inventory is 2,000 liters and 20,000 liters at 3718F and 105DR, respectively.

Each of the three facilities 3718F, 105DR, and 221T has a thermal treatment system for treatment of the dangerous wastes. Other treatment consists of reaction with water or Dowanol-EB (ethylene glycol butyl ether). Treatment capacities of 3718F, 105DR and 221T are 20 liters per day, 100 liters per day, and 100 liters per day, respectively.

At the Maintenance and Storage Facility (MASF), 437 Building, the small diameter cleaning vessel (SDCV) and large diameter cleaning vessel (LDCV) are used for removing sodium from radioactive waste material prior to disposal. Treatment consists of sodium reaction with a water vapor-nitrogen process. Capacity for treatment is 20 liters per day for each vessel.

The Sodium Removal Pilot Plant (SRPP), 324 Building, is similar in size and operation to the MASF SDCV. Capacity for treatment is ten liters per day.

Table C-1 lists the dangerous wastes to be stored and/or treated at all three facilities, how they are generated and several characteristics of each.

Table C-2 lists general information for each facility.

## C-2 WASTE ANALYSIS PLAN

This Waste Analysis Plan provides that the alkali metal waste treated and/or stored at the 3718F (300 Area), 221T (200 Area), 105DR (100 Area), 437 (400 Area) and 324 (300 Area) facilities will be adequately identified by the facility owner or operator so the waste may be managed properly.

The only wastes that WHC will treat or store are alkali metals or laboratory quantities of other only ignitable or reactive wastes. Waste alkali metal treatment consists either of burning or chemical reaction with water, methanol, isopropyl alcohol or Dowanol-EB (ethylene glycol butyl ether). All five facilities are treatment facilities. The waste alkali metal storage areas are the 3718F and 105DR facilities. There are no disposal areas.

Alkali metals are classified as dangerous wastes according to reactivity and ignitability characteristics. These characteristics in addition to other detailed physical and chemical analyses are well documented in numerous scientific studies (Foust, 1972; Ballif, 1978).

A visual check is performed at the treatment facility prior to treatment to verify that the waste is an alkali metal as described on the "Hazardous Material Shipment Record" (HMSR) and/or "Request to Dispose of Nonradioactive Hazardous Materials" that accompanied the shipment. Due to the physical characteristics that allow the alkali metals to be visually identified (e.g., color, texture), along with the documented history of the waste material and the very limited number of alkali metal waste generators and waste which is only produced onsite, no further analysis is necessary.

The safety and handling implications of obtaining samples or inspecting each container at the time of acceptance for storage are many. The problems include the combustibility of eutectic sodium-potassium alloy in air, the oxidation products of sodium and lithium and the various packaging methods in which the alkali metal wastes are received.

At the present time, both 221T and 105DR are their own respective generators of alkali metal waste and as such there would be no possible questions as to the waste identification. This is also true of the 437 Facility whose waste is only generated in the 400 Area. If at a future time these three facilities would begin accepting other generators' alkali metal waste for treatment, they would follow the above listed waste identification procedures at their respective facilities. In general, the Hanford site is its own alkali metal waste generator. There are only a small number of generators of alkali metal waste, and through strict quality controls and administrative controls the waste is properly identified and verified at the generator location.

This Waste Analysis Plan, which is kept at the storage and/or treatment facilities, describes procedures operators follow to comply with WAC-173-303-300, in the event an alkali metal waste cannot be positively identified at the time of storage or treatment.

C-2a Parameters and Rationale

The parameters used to verify the identity of an alkali metal waste to be handled involves visual inspection and use of atomic absorption spectroscopy if visual inspection does not verify the waste as an alkali metal. These visual parameters are chosen due to the well characterized information on alkali metals. Atomic absorption spectroscopy allows identification of each element in the sample.

C-2b Test Methods

The procedure for testing for the identification parameters are contained in the specific laboratory operating manuals and applicable ASTM or EPA standards (SW-846 Methods).

C-2c Sampling Methods

The procedures for obtaining representative samples for testing of the identification parameter are contained in facility standard operating procedures which conform to SW-846.

C-2d Frequency of Analyses

The analysis of the waste will not be repeated with any set frequency -- only if a positive identification of the waste cannot be made at the time of storage or treatment.

C-2e Additional Requirements for Wastes Generated Offsite

This section is not applicable since only on-site wastes are accepted. The on-site generators supply the "Request to Dispose of Nonradioactive Material" form with each waste shipment to 3718F. Also, a "Hazardous Material Shipment Record" may be supplied by the generator, depending on the area in which the waste was generated. (Sample forms - Appendix C-1). Proper training is required and documented by the generator to fill out these forms (the HMSR requires an authorized shipper per DOT regulations). Both forms are very detailed in stating who generated the waste, where it was generated, type of waste (including specific hazard class), quantity, container type and packaging, and storage location. Form signoffs, proper training in alkali metals, and administrative controls guarantee the integrity of the verification of the waste.

C-2f Additional Requirements for Ignitable, Reactive, or Incompatible Wastes

Included in Part B Permit, Section D-8 Thermal Treatment and D-2 Tanks, is specific information requested for waste to be treated. Also, see specific references for further information on the waste.

C-2g Waste Movement

Verification of waste shipments, documentation of inventory, and inventory movement are part of the facility operating records. (See Appendix C-2 for example forms).

## REFERENCES

Foust, O. J., 1972, "Sodium - NaK Engineering Handbook." Vol 1-5. Gordon and Breach, Science Publishers, Inc.

Ballif, J. L., et al., 1978, "Lithium Literature Review: Lithium's Properties and Interactions." HEDL-TC-1000, Hanford Engineering Development Laboratory, January.

# TABLE C-1
# DANGEROUS WASTES

| | SODIUM | LITHIUM | SODIUM-POTASSIUM ALLOY |
|---|---|---|---|
| Chemical symbol | Na | Li | NaK |
| Density at 20°C, $g/cm^3$ | 0.968 | 0.534 | 0.867 |
| Melting temperature | 208°F | 357°F | 9.3°F |
| Boiling temperature | 1618°F | 2457°F | 1445°F |
| Volume increase on melting | 2.7% | ~3.5% | 2.5% |
| Generated by | Residues from experiments, tanks and equipment | Residues from experiments | Residues from fuel storage facility and various experiments |
| EPA waste number | D003 | D003 | D003 |
| Comments: | Solid form | Solid form | Liquid form; eutectic NaK is 78% Potassium, 22% Sodium |

TABLE C-2

GENERAL INFORMATION

| FACILITY | TSD CLASSIFICATION | TSD UNITS | WASTES TREATED |
|---|---|---|---|
| 3718-F | Storage, Treatment | Thermal treatment, tanks | Alkali metals and alloys; other ignitable or reactive wastes |
| 105-DR | Storage, Treatment | Thermal treatment | As above |
| 221-T | Treatment | Thermal treatment | As above |
| MASF | Treatment | Tanks | As above |
| 324 | Treatment | Tanks | As above |

# APPENDIX C-1

# SAMPLE FORMS

# NEW FORM

| WESTINGHOUSE HANFORD COMPANY | WASTE SYSTEM OPERATIONS<br>REQUEST TO DISPOSE OF NONRADIOACTIVE MATERIAL | CONTROL NUMBER |
|---|---|---|

page __ of __

I. GENERATOR: The Generator should complete Part I and give to truck driver.

A. Generator's Name: ____________ Phone: ____________ Dept. ________ Cost Code: ________

B. Waste Description: (If more than five items, attach additional sheets) If empty, list last contents. If store stock items, list stock number and generic name.

| Generic Name | Total Quantity | Type of Container | Number of Containers | (Check One) | | | | Container Number |
|---|---|---|---|---|---|---|---|---|
| | | | | Sol. | Liq. | Gas | Empty | |
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |
| 5. | | | | | | | | |
| 6. | | | | | | | | |
| 7. | | | | | | | | |

C. Have efforts been made to recycle (e.g., excess)? ____________

D. Pickup Location: ____________ Deliver to: ____________

E. Containers closed and in good condition, for transport and storage.

"I hereby certify that Part One of this form has been completed to the best of my knowledge."

Generator's Signature: ____________ Date: ________

Notify storage location before shipping

II. RADIATION MONITORING This is not an off-site release:

Surface

☐ < 300 c/mβγ ☐ < 50 c/mα

Smears of Outer Container

☐ < 22 dpm $\beta\gamma/cm^2$

☐ < 2.2 dpm $\alpha/cm^2$

Radiation Monitoring ____________

Signature

Date: ____________

III. TRANSPORTED by: ____________ delivered to: ____________

Driver Signature

Date: ____________ Intra area shipments only.

IV. STORAGE AREA Received by: ____________ Location: ____________

Date: ____________ Send white & Blue copies to WSO, W/A-70.

V. WASTE SYSTEMS OPERATIONS Request received date: ________ Disposal Date: ________

Samples taken by: ____________ Deliver to: ____________ Date: ________

Radioactivity results date: ________ delivered to HEHF date: ________ HEHF results date: ________

VI. WASTE SYSTEMS ENGINEERING Information received date: ________ RHO request date: ________ By: ________

Reviewed by ____________ Date: ________ RHO Disposal Number: ________ Date: ________

☐ Regulated ____________

☐ Non Regulated ____________ Remarks ____________

BC-7900-020 (8-85)

White – Waste Systems Operations Blue – Waste Systems Engineering Green – Storage
Canary – Transportation Pink – Radiation Monitors Goldenrod – Waste Generator

This form is designed to track material from generator to final disposal. Each part will be completed by the organization performing their task.

Forms are available from Waste Systems Operations (WSO), 376-3012.

WESTINGHOUSE HANFORD COMPANY

WASTE SYSTEM OPERATIONS

**REQUEST TO DISPOSE OF NONRADIOACTIVE MATERIAL**

CONTROL NUMBER 1

I. **GENERATOR:** The Generator should complete Part I and give to truck driver. page __ of __

A. Generator's Name: ______ 2 ______ Phone: ______ Dept. ______ Cost Code: ______

B. Waste Description: (If more than five items, attach additional sheets) If empty, list last contents. If store stock items, list stock number and generic name.

| Generic Name | Total Quantity | Type of Container | Number of Containers | (Check One) | | | | Container Number |
|---|---|---|---|---|---|---|---|---|
| | | | | Sol. | Liq. | Gas | Empty | |
| 1. 3 | 4 | 5 | 6 | | 7 | | | 8 |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |
| 5. | | | | | | | | |
| 6. | | | | | | | | |
| 7. | | | | | | | | |

C. Have efforts been made to recycle (e.g., excess)? ______ 9 ______

D. Pickup Location: ______ 10 ______ Deliver to: ______

E. Containers closed and in good condition, for transport and storage. 11

"I hereby certify that Part One of this form has been completed to the best of my knowledge."

Generator's Signature: ______ 12 ______ Date: ______

Notify storage location before shipping

1 - Control Number will be assigned by Waste Systems Operations (WSO) after they have received the Request.

PART I of this form is to be completed by the generator of the material.

2 - Generator's name, phone, dept. and cost code, this information will be used for all charges relating to material disposal. (this may be as high as $10/lb)
3 - Generic Name - give generic name if known, maybe manufacture's name and product name or number.
4 - Total Quantity of material in containers in pounds or gallons, if empty, just put an "M".
5 - Type of Container - this may also be size of container or package (if containers of different sizes, list as another item)
6 - Number of containers or packages of the same size.
7 - Check physical form of material, check empty only if container has no free flowing material remaining.
8 - Container Numbers will be assigned by WSO.
9 - Efforts to recycle or excess material, the generator should exhaust all efforts to excess, give away or reuse material first.
10 - Give location of material and where it is to be delivered, for the truck driver, if material is to be moved, inter-area shipments shall be per MG-137, Section 14.
11 - All containers to be moved or transported must be in condition that they will not present a hazard during handling and transporting.
12 - Generator's Signature - after reviewing form, sign off. If the material is to be moved intra-area, contact the approved storage location before calling for transportation, keep bottom copy of form and give the rest of them to truck driver. If it is not to be moved, send forms to WSO at W/A-70.

WESTINGHOUSE HANFORD
WASTE SYSTEMS ENGINEERING

INSTRUCTIONS

# REQUEST TO DISPOSE OF NONRADIOACTIVE MATERIAL

## ROUTING (FORM BC-7900-020)

**PART I** — WASTE GENERATOR COMPLETES
KEEP GOLDENROD COPY

**PART II** — RADIATION PROTECTION TECH. COMPLETES
KEEP PINK COPY

IF TRANSFERRED TO HOLDING AREA

CALL HOLDING LOCATION
300 AREA 6-3012
400 AREA 6-4726

GIVE REQUEST TO TRUCK DRIVER

**PART III** — DRIVER TO COMPLETE
KEEP CANARY COPY

DRIVER TO GIVE REQUEST TO RECEIVER AT HOLDING LOCATION

**PART IV** — HOLDING AREA PERSONNEL COMPLETES
KEEP GREEN COPY

SEND WHITE AND BLUE COPIES TO WSO

HOLD WASTE FOR WSO PICK-UP

SEND REMAINING COPIES TO WSO

**PART V** — WASTE SYSTEMS OPERATIONS
KEEP WHITE COPY

SAMPLES AND OBTAINS LAB RESULTS AS REQUIRED
DISPOSES OF WASTE PER INSTRUCTIONS FROM WASTE SYSTEM ENGINEERING
MAINTAINS RECORDS OF DISPOSAL

**PART VI** — WASTE SYSTEM ENGINEERING
KEEP BLUE COPY

OBTAINS RHO APPROVAL FOR PACKAGING, TRANSPORTING, STORAGE AND FINAL DISPOSAL

HEDL 8411-200

| | | | |
|---|---|---|---|
| II. RADIATION MONITORING This is not an off-site release: | | | Radiation Monitoring ______ |
| Surface | | Smears of Outer Container | Signature |
| ☐< 300 c/m βγ | ☐< 50 c/m α | ☐< 22 dpm βγ/cm² <br> ☐< 2.2 dpm α/cm² | Date: ______ |

**PART II** Radiation Monitoring: This is not an offsite release. This part only releases material for intra-area movement. The limits set here are about the detection limits of a portable meter. Keep Pink copy.

| | |
|---|---|
| III. TRANSPORTED by: ______ (Driver Signature) | delivered to: ______ |
| Date: ______ Intra area shipments only. | |

**PART III** Transported by: Signature of driver and delivered to - Intra-area only - such as 400 Area only, not between areas such as 300 to 400. Check containers, if you feel they are not safe to transport, refuse them. Keep Canary copy.

| | |
|---|---|
| IV. STORAGE AREA Received by: ______ | Location: ______ |
| Date: ______ .Send white & Blue copies to WSO. W/A-70. | |

**PART IV** Storage Area: Signature, location and date of person receiving material. Check containers, if you feel they are not in good enough condition for safe storage, refuse to accept and return to generator. Send White and Blue copies of this form to WSO. Keep Green copy.

| | | |
|---|---|---|
| V. WASTE SYSTEMS OPERATIONS Request received date: ______ | Disposal Date: ______ | |
| Samples taken by: ______ | Deliver to: ______ | Date: ______ |
| Radioactivity results date: ______ | delivered to HEHF date: ______ | HEHF results date: ______ |

**PART V** Waste Systems Operations: Date copies received from staging area personnel. Final disposal date when material has been removed from staging to disposal (disposed of offsite, sent to RHO, excess or reissued) . WSO will number containers as required, using the Control Number assigned to the Request as the first 4 digits and the container number as assigned. Signature of person that took samples (if required) where samples were delivered and date. Date results were received on radioactivity, date sample delivered to HEHF (if required) and date of HEHF results received.

| | | | |
|---|---|---|---|
| VI. WASTE SYSTEMS ENGINEERING information received date: ______ | | RHO request date: ______ | By: ______ |
| Reviewed by ______ | Date: ______ | RHO Disposal Number: ______ | Date: ______ |
| ☐ Regulated ______ | | | |
| ☐ Non Regulated ______ | | Remarks ______ | |

**PART VI** Waste Systems Engineering: Date Blue copy received or date work was started on this Request. Signature of group that may have to review Request to determine what class material fits into and results of findings. RHO request date and Disposal number (if required).

Performed by ______________

Date ____________________

SODIUM TRANSFER/DISPOSAL RECORD

Sodium removed from ______________________ (AMTF inventory #)

Total weight of original container before transfer ____________ lbs.

Total weight of original container after transfer ____________ lbs.

Net weight of sodium transferred ______________________ lbs.

Original container retained ☐ yes ☐ no

If not retained, how was original container disposed of?

______________________________________________________________________

______________________________________________________________________

Sodium transferred to ☐ drum ______________________ (AMTF inventory #)

☐ disposal container

☐ equipment ______________________________
(equipment name and description)

☐ other ______________________________
(explain)

Sodium disposed of by ☐ burning ☐ methanol

☐ dowanol ☐ water

☐ other ____________________
(explain)

Scrap metal and materials disposed of ☐

Facility cleanup completed ☐

Comments ______________________________________________

# APPENDIX C-2

# SAMPLE FORMS

# AMTF INVENTORY LOG

| CONTAINER # | DATE | NAME | BUILDING | AMOUNT | TYPE |
|---|---|---|---|---|---|
| | | | | | |
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# HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

**SHIPPING INST**

SHIP TO

Company

Address

City, State, Zip

Attention:

Originating Facility

Building ______

Area ______

Originator Signature

Date

FROM: ☐ RHO ☐ WHC ☐ UNC ☐ PNL ☐ JAJ

OFFSITE ONLY: SHIP: ☐ PREPAID ☐ COLLECT

VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck)
☐ Air (Passenger) ☐ Air (Cargo)

Cost Code:

**SHIPMENT DESCRIPTION**

## CONTAINERS / PACKAGING | CONTENT DESCRIPTION

| Number of Containers | Type | DOT Spec | Package Dimensions | Quantity Pkg | Gross Wt Each Pkg | See 49 CFR 172.101(c) Hazardous Material Table |
|---|---|---|---|---|---|---|
| | | | | | | Proper Ship Name:<br>Hazard Class:<br>UN/NA No.:<br>List Secondary Hazards:<br>List Labels Req'd/Applied |
| | | | | | | Proper Ship Name:<br>Hazard Class:<br>UN/NA No.:<br>List Secondary Hazards:<br>List Labels Req'd/Applied |
| | | | | | | Proper Ship Name.<br>Hazard Class:<br>UN/NA No.:<br>List Secondary Hazards:<br>List Labels Req'd/Applied |

Total No. Containers

Gross Wt of Shipment

Identify Placards Required:
1. ______ 3. ______
2. ______ 4. ______

Identify Property Control or Return Order No.: (if applicable)

Material in manufacturers original container: ☐ Yes ☐ No

Container free of deterioration or damage: ☐ Yes

Container acceptability documented. ☐ Yes

Material is packaged, sealed, marked and labelled to meet DOT requirements ☐ Yes

Describe Internal Packaging:

| RADIATION RELEASE | Survey No | Date | RM Signature | Print Name |
|---|---|---|---|---|
| | | | | |

## CERTIFICATION

**CONTRACTORS CERTIFICATION**

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

This shipment is within the Limitations prescribed for:
☐ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: ______ Print Name ______ Date: ______

## FOR OFFSITE SHIPMENTS — ADDITIONAL APPROVAL REQUIRED

**ROCKWELL** **TRAFFIC**

| B/L No. | Date Shipped | ETA | Routing | Special Considerations |
|---|---|---|---|---|
| | | | | |

Rockwell Traffic: ______ Rockwell Shipping: ______ ______

54-3000-596 (R 7-83)

# SECTION D
# PROCESS INFORMATION

## 3718-F

The Alkali Metal Treatment Facility is a storage, treatment and decontamination facility for handling alkali metal wastes or equipment that is contaminated with alkali metals. The facility is located in the 3718-F building in the 300 Area of the Hanford Site. None of the material treated at the facility is radioactive. The facility can also be used to store alkali metals and wastes on an interim basis. Approximately 2000 liters can be stored at the facility.

Figure D-1 is a plot plan for the facility. The 3718-F Building is a single-story building that is 20 feet wide by 48 feet long. The gabled ends, roof and siding are corrugated steel. The building is provided with electric lights, electric space heaters and a window air conditioner. The building sits on a concrete pad. The northern half of the building is the storage area and the southern half of the building is a work area. At the south end of the building is a 12-foot by 20-foot loading pad. A concrete pad measuring 25 feet by 48 feet is located on the east side of the building. Located on the east pad are the Burn Shed, the Fume Scrubber, a water tank and a safety shower.

The Burn Shed is a small sheet metal enclosure with an eight-foot-wide, garage-type roll-up door. Alkali metal waste is burned in the shed. The Burn Shed is connected to the Fume Scrubber. The Fume Scrubber consists of an American Air Filter Company compactor, which acts as a wet dust collector, a type "R" Rotoclone cyclone-type moisture separator and a high-pressure, high-velocity exhaust fan. The dust collector (compactor) dissolves the sodium oxide smoke which is passed through the fume scrubber, and the moisture separator removes this solution (aqueous sodium hydroxide) from the exhaust air stream.

The 3718-F Building is located within a "protected area". This means that the building is within a double fenced area that is accessible only to a limited number of people with special access clearances. The larger area containing the protected area is the 300 Area.

105-DR

The Large Sodium Fire Facility (LSFF) is a research laboratory located in the 105-DR Building, which is in the 100-D Area of the Hanford Site. The facility is primarily used to conduct experiments for studying the behavior of molten alkali metals and alkali metal fires. As is implied by the facility's name, many of the studies have been performed using sodium. The wastes generated at the facility include alkali metal oxides, hydroxides, and carbonates and alkali metal waste. The wastes are generated while conducting experiments and from the off-gas treatment system. A secondary mission of the facility is to treat alkali metal waste generated both at the LSFF and by the 221-T Containment Systems Test Facility. When the facility is being used to treat the alkali metal waste, the waste is burned to completion so that no metal waste is left. The waste products from this process are also alkali metal oxides, hydroxides, and carbonates. None of the wastes generated in the facility are radioactive.

The 105-DR Building, in which the LSFF is located, is used to store waste alkali metals. Space is available for storage of up to 20,000 liters.

A floor plan of the LSFF is shown in Figure D-2. The following description of the facility uses the terms shown on the floor plan. The facility allows tests to be conducted in three different configurations. The Large Test Cell is a steel cubicle in which the atmosphere can be controlled. The Cell is not a pressure vessel. The volume of the Cell is approximately 106 cubic meters. The Small Fires Room contains two steel tanks that are used for experiments. Each tank has a volume of approximately 14.1 cubic meters. The tanks are pressure vessels and the atmosphere inside the tanks can be controlled. Both the Large Test Cell and the tanks in the Small Fires Room can be purged with nitrogen or argon and maintain a controlled nitrogen or argon atmosphere. The Air Cleaning Room is a room in which reactions of alkali metals can be conducted in a normal air atmosphere at atmospheric pressure. The room has a normal air supply and is exhausted to an off-gas treatment system, but is not equipped for working in nitrogen or argon atmospheres. The volume of the room is approximately 335 cubic meters.

The facility is equipped with an off-gas treatment system that serves the test vessels and the Air Cleaning Room. The system consists of a wet scrubber, High Efficiency Particulate Air (HEPA) filters and a discharge stack.

Liquid wastes from the experiments are collected in a holding tank and are sampled to determine pH (which is less than 12.5 prior to discharge). After verification of the pH, the liquid wastes are discharged through existing 105-DR Building piping to a crib. Corrosivity is this waste stream's only potential hazardous characteristic.

The 105-DR Building was built in the 1950s for a nuclear reactor building. The reactor has been shut down and the fuel removed from the building. The building is a light, non-airtight industrial structure of reinforced concrete in the lower portions and of concrete block in the upper portions. Roof construction is of reinforced concrete or precast concrete roof tile, depending on the specific roof area. An extensive ventilation system provides ventilation for personnel comfort and, through controlled pressure zones, air flow control for control of the potential spread of contamination. The 105-DR Building is equipped with waste disposal piping that routes liquid wastes to a retention basin and waste cribs.

221-T

The Containment Systems Test Facility is a research laboratory located in the 221-T Building, which is in the 200 West Area of the Hanford Site. The facility is used to perform experiments with alkali metal compounds. The compounds are reacted to form aerosols and the physical and chemical properties of the aerosols are measured.

The wastes generated at the laboratory consist of alkali metal hydroxides, oxides and carbonates that are products of both the experiments and the off-gas system. Alkali metal waste is also generated at the facility. The wastes generated are not radioactive.

Figure D-3 shows the main features of the Containment Systems Test Facility. The experiments are conducted in a large steel tank that is approximately 67 feet tall and 25 feet in diameter. The tank can be completely sealed and is equipped with an off-gas system that is 99.99 percent efficient at trapping particles in the size range generated by the experiments in the tank. The main components of the off-gas system are a wet gravel scrubber and a High Efficiency Particulate Air (HEPA) filter. The rest of the test facility consists of handling equipment for the materials used in the tests, support equipment, offices and change rooms.

Effluents from a scrubber are part of the waste generated by the facility and consist of dilute solutions of alkali metal oxides, hydroxides and carbonates. The effluent is pumped to holding tanks and is sampled prior to release. The other waste stream consists of wash solutions and chemical reaction products that accumulate in the bottom of the test vessel. Once again, the waste stream consists of alkali metal oxides, hydroxides and carbonates. The waste is pumped to holding tanks and sampled before release. Depending on the pH of the solutions, as determined by the sampling of the holding tanks, both waste streams are pumped to either the large underground storage tanks for use by the 200 Area waste treatment operator or to disposal cribs. A third waste stream consists of alkali metal waste. The metal is packaged and shipped to another facility, the Large Sodium Fire Facility, for treatment. The Large Sodium Fire Facility is described in another portion of this application.

The 221-T Building was built in the 1940s for chemical processing of nuclear reactor fuels. All portions of the building including floors, walls, roof and foundation are constructed of reinforced concrete, varying in thickness from three feet to eight feet. The exhaust system for the building uses HEPA filters and a submerged gravel scrubber for filtering the air before it is discharged from the building. The previously described off-gas system for the test tank discharges into the 221-T ventilation system and is filtered by the HEPA filters and the sand filter. The 221-T Building is also provided with piping systems that allow liquid effluents to be discharged either to the large underground storage tanks used at Hanford or to waste cribs. The 221-T Building is no longer used for processing nuclear fuel. It is now used for decontamination of large equipment items, storage, and to house the Containment Systems Test Facility.

MASF

The Maintenance and Storage Facility (MASF) was built to meet the maintenance and repair facility needs and to provide a storage area for equipment used in the Fast Flux Test Facility (FFTF) that is sodium-wetted, radioactive or needs specialized maintenance. The building is located in the 400 Area of the Hanford Site.

The building consists of a bolted steel, upper level shell on a concrete basement which houses the lower levels. Large and/or heavy materials are handled by a 200-ton crane and a 60-ton crane. The total area of the building is approximately 60,000 square feet including the main floor, lower levels, and mezzanine. Figure D-4 shows the main features of the facility.

The MASF has systems for handling both process liquid wastes and radioactive liquid wastes. Non-hazardous process liquid wastes are monitored for radioactivity, and if none is detected, the liquid is released to a pond. If radioactivity is detected, the liquid is diverted to the radioactive liquid waste system. The radioactive liquid waste system collects and stores the radioactive liquid waste in tanks located on the lower level of the facility. The storage tank is pumped out to a railroad car which transports the waste to the 200 Area of the Hanford Site for treatment by the operating contractor.

The MASF includes a system for removing residual sodium from radioactive and nonradioactive FFTF components and waste material. The system uses a water-vapor-nitrogen process and includes all vessels, piping, and equipment required for circulating, processing and discharging the process fluid to the appropriate building liquid waste system. The sodium cleaning system consists of two cleaning vessels, the Large Diameter Cleaning Vessel (LDCV) and the Small Diameter Cleaning Vessel (SDCV). Each vessel is located in a below-grade cell that provides shielding and containment. Equipment and materials to be cleaned are top-loaded into the vessels by the building cranes.

MASF contains two decontamination suites that are used for decontaminating small components and equipment used at FFTF. The two special decontamination areas are connected to the building radioactive liquid waste system. Components cleaned in the suites are both radiologically and sodium contaminated.

A cask decontamination station has been installed in the facility to clean shipping casks that are internally contaminated with sodium and radioactive contaminants. This facility is also connected to the building radioactive liquid waste system.

The facility is also used for maintenance of large refueling equipment that does not fit in any of the decontamination suites or cleaning vessels. Sodium removal is accomplished by manually removing the sodium in specially prepared clean areas accessed by the 200 and 60-ton cranes.

324 Building Sodium Removal Pilot Plant

The 324 Building Sodium Removal Pilot Plant is a small decontamination station that has been used for developing methods for decontaminating equipment that has been contaminated with radioactive sodium and for treating of small quantities of radioactive alkali metals. The equipment is located in a room in the 324 Building in the 300 Area of the Hanford Site. A schematic diagram of the system is shown in Figure D-5.

The main equipment item is a cylindrical, stainless steel tank that is 12 feet tall and 30 inches in diameter. The top of the tank is removable. The tank is rated for service at 15 psig and 250 degrees F. The tank is vented through a water-cooled condenser to the 324 Building radioactive exhaust system. The tank is equipped with a drain that can be routed to either the Radioactive Liquid Waste Sewer or to the Process Sewer. Both argon and nitrogen gases, demineralized water and steam service are provided for the tank. The room is equipped with a four-ton crane for handling the removable tank top and equipment items that are being decontaminated.

The 324 Building is a Chemical Engineering Laboratory that was designed and equipped for experiments and pilot plant demonstrations of both radioactive and nonradioactive processes. The building has central systems for handling radioactive exhausts and radioactive wastes generated within the building.

The 324 Building is located within a "protected" area. This means that the building is within a double fenced area that is accessible only to a limited number of people with special access clearances. The larger area containing the protected area is the 300 Area.

## D-1 CONTAINERS

Waste stored in containers at 3718-F and 105-DR includes NaK, sodium, lithium and occasionally laboratory quantities of reactive or ignitable wastes.

### D-1a Containers With Free Liquids

The 3718-F Alkali Metal Treatment Facility is the only facility that currently receives and treats NaK, a eutectic alloy of sodium and potassium which is a liquid at room temperature.

#### D-1a(1) Description of Containers (3718-F)

NaK waste is received in rigid steel containers equipped with connections for flushing and filling with an inert gas and a pressure gage to indicate the amount of gas covering the NaK. Containers must be sealed and indicate a positive cover gas pressure of three to five psig. The container must also be labeled "NaK" and have the amount of NaK within the containers clearly displayed. Containers vary in size and shape from steel tubes to test pots sent to the facility for alkali metal removal and cleanup. After the equipment has been cleaned, it is returned or refilled with NaK and returned to the custodian. NaK waste can also be received as NaK-soaked rags packed in NaX (a fire extinguishing agent). In this case, the NaK is a solid waste.

See Section D, Introduction for Facility Layout.

Compatibility of NaK with the containers has been previously established (Lyon, 1982).

#### D-1a(2) Container Management Practices

NaK waste containers are inspected weekly to ensure that:

- o Seals are intact
- o Containers do not exhibit external signs of rust or corrosion
- o Containers do not have alkali oxides on external surfaces (indicating leaks)
- o Containers are not bulged (indicating buildup of gaseous by-products)
- o Containers show no evidence of severe dents

Due to the reactive nature of NaK, the containers are not opened once they have been received. The contents of the containers are not verified or analyzed but are treated as containing NaK until they are opened for disposal. Also, the containers are not opened, handled or stored in a manner that may cause them to rupture or leak.

D-1a(3) Secondary Containment System Design and Operation

All NaK waste containers are doubly contained within a 55-gallon drum (DOT SPEC 17H steel drum), 30-gallon drum (same SPEC as 55-gallon) or five-gallon steel paint bucket. This container within a container management system allows any leaks or spills to be contained until the spill is detected and cleanup measures initiated. These outer containers have sufficient capacity to contain more than ten percent of the inner container volume or the largest inner container volume in the case of multiple containers within one outer container.

The 3718-F Building does not have an automated fire control sprinkler system, or water lines passing through it, because of the reactive nature of the alkali metals with water. The floor of the 3718-F storage building is concrete. The storage area is a covered building which prevents run-on of surface water. A supply of fire extinguishing agents is maintained at the facility and personnel are trained in alkali metal fire fighting techniques.

D-1a(4) Removal of Liquids from Containment System

Since NaK may ignite spontaneously when exposed to air, spilled or leaked NaK waste is cleaned up immediately upon detection. All 3718-F personnel receive training on proper fire extinquishing techniques. See Section H for personnel training information.

D-1b Containers Without Free Liquids (3718-F, 105-DR)

The 3718-F Alkali Metal Treatment Facility and 105-DR Facility both receive and store alkali metal wastes and occasional laboratory quantities of other reactive or ignitable wastes. Containers without free liquids are handled in a similar manner as containers with free liquids.

D-1b(1) Test for Free Liquids (3718-F, 105-DR)

Alkali metal waste, which includes NaK-soaked cleanup items (as described in Section D-1a(1)), sodium and lithium, are solids at room temperature. See Table D-1 for melting points of these alkali metals. Administrative controls, as noted in Section C-2, assure that only solids are placed in the container. Thus, no tests for free liquids are performed.

TABLE D-1

SELECTED PHYSICAL PROPERTIES OF THE ALKALI METALS

| | Sodium | Alloy | Lithium |
|---|---|---|---|
| Symbol: | Na | NaK | Li |
| Mol. Wt.: | 22.997 | 35.6 | 6.94 |
| Boiling Point: | 1618°F | 1443°F | 2457°F |
| Melting Point: | 208°F | 10°F | 357°F |
| Density at 25°C: | 0.968 | 0.867 | 0.534 |

D-1b(2) Description of Containers (3718-F, 105-DR)

Alkali metal waste is received at 3718-F and 105-DR Facilities in sealed metal containers varying in size including one-gallon and five-gallon steel cans and various pieces of piping and equipment. All waste received for storage must be doubly contained (container within a container) prior to storage. This secondary containment is described in Section D-1a(3).

See Section D, Introduction for Both Facilities Layouts and Storage Area Locations.

Compatibility of the wastes with the containers has been established previously.

D-1b(3) Container Management Practices

Alkali metal waste containers are inspected weekly to ensure that:

- o Seals are intact
- o Containers do not exhibit external signs of rust or corrosion

- o Containers do not have alkali oxides on external surfaces (indicating leaks)
- o Containers are not bulged (indicating buildup of gaseous by-products)
- o Containers show no evidence of severe dents

Due to the reactive nature of the alkali metals, containers are not opened once they have been received. The contents of the containers are not verified or analyzed but the containers are treated as if they contain alkali metals until they are opened for treatment. Also, the containers are not opened, handled or stored in a manner that may cause them to rupture or leak.

D-1b(4) Container Storage Area Drainage (3718-F, 105-DR)

Wastes are doubly contained to prevent any contact with possible standing liquids. Cleanup procedures are immediately initiated should a leak or spill occur.

## D-2 TANKS

The Alkali Metal Treatment Facility (3718-F) has three (3) reaction tanks used for cleaning pieces of piping that contain non-radioactive alkali metal waste or other only ignitable or reactive waste. They may also be utilized for reaction of laboratory quantities of oxidized wastes listed above that are very difficult to treat otherwise. Two of the tanks contain Dowanol-EB (ethylene glycol butyl ether) and the third tank contains water.

The Maintenance and Storage Facility (MASF) cleaning tanks are not presently in operation but will be started up in late 1986. MASF contains two treatment tanks, the large diameter cleaning vessel (LDCV) and the small diameter cleaning vessel (SDCV). They are used for removing residual sodium from radioactive and nonradioactive waste material prior to disposal. They may also be used for reacting limited quantities of sodium.

The 324 Building Sodium Removal Pilot Plant (SRPP) is not operational at this time but is held in standby condition for possible future use. The SRPP contains one reaction vessel used for removing residual sodium from equipment and for treating small quantities of radioactive or nonradioactive alkali metal waste.

D-2a Description of the Tanks

3718-F

The two Dowanol-EB tanks are constructed of 304L stainless steel and have hinged covers to keep out water and debris. The total volumes are 430 gallons (dimensions are approximately 29.5 inches wide by 120 inches long by 28 inches deep) and 135 gallons (dimensions are approximately 10.5 inches wide by 291 inches long by 10 inches deep). The use of the tanks is identical except that the smaller tank is used for cleaning longer pieces of piping that cannot be divided into smaller pieces and cleaned in the larger volume tank.

The tank containing water is constructed of 304L stainless steel with a hinged screen cover. This reaction tank is also used for cleaning small pieces of piping containing alkali metals. Total volume is 430 gallons (dimensions are approximately 29.5 inches wide by 120 inches long by 28 inches deep).

Each of the three above-mentioned reaction tanks were constructed many years ago and therefore design specifications are not available.

The shell thickness of each 430-gallon tank is one-eighth inch and the 135-gallon tank is one-eighth inch.

The 3718-F Facility border fence is posted with the applicable signs warning of dangerous wastes so it is not necessary to post signs on the individual reaction tanks. See Section F-1a(3)(a) - 3718-F Security Procedures and Equipment for further information.

MASF

The SDCV is a 325-gallon cylindrical stainless steel pressure vessel with a removable cover which allows a component or waste to be placed in the vessel for treatment. The SDCV is located vertically in a below grade shielded area to provide shielding and allow top loading. The vessel is designed to the

ASME Boiler and Pressure Vessel Code, Section VIII, Division I. The vessel is constructed of 304 stainless steel with an overall height of 15 feet 3 inches and a 24-inch outer diameter. Shell thickness is three-eighths inch.

The LDCV is an 18,000 gallon stainless steel pressure vessel and has the same loading and location features as the SDCV. It is designed to the ASME Boiler and Pressure Vessel Code, Section VIII, Division I. The vessel is constructed of type 304 stainless steel with an overall height of 41 feet and a nine-foot inner diameter. The vessel shell and top flange thickness vary from one-half inch to three-quarters inch.

324 SRPP

The SRPP contains a 455-gallon cylindrical, stainless steel tank with a removable cover for component or waste placement into the tank. The tank rests six inches above the floor on steel braces which provide structural support. The tank is rated for service at 15 psig and 250 degrees F. Tank dimensions are 29.25 inches inner diameter by 13 feet high. The tank is constructed of three-quarter inch 304L stainless steel plate with three-quarter inch 304L stainless steel plate for the top and bottom.

D-2b Tank Corrosion and Erosion

The material of construction for all reaction tanks is stainless steel and was chosen for the best compatibility with the Dowanol-EB and sodium hydroxide solutions. Each tank is inspected for integrity before use.

The stainless steel material was chosen for its corrosion resistance to the solutions in use (Lyman, 1961; Perry and Chilton, 1973). (See Section D-2c(1) for solutions produced.) The solution pH range is between pH 8 and pH 12.

D-2c Tank Management Practices

D-2c(1) Treatment

3718-F

Administrative controls prevent overfilling of the Dowanol-EB reaction tanks before initial use. The solid plate covers prevent any tank overfilling from rainwater after initial filling with Dowanol-EB.

The Dowanol-EB solution is ethylene glycol butyl ether. This solution reacts with the sodium on the piping and produces sodium 2-butoxy ethoxide and hydrogen.

When use of the Dowanol-EB solution is complete, the solution is drained back into the original 55-gallon drums and disposed of as a dangerous waste.

The water treatment consists of reaction of the sodium on the piping with the water to produce sodium hydroxide and hydrogen.

At the conclusion of the cleaning process, the water tank solution is not a dangerous waste. The pH is confirmed to be between 2 and 12.5 and the solution is then discharged to the process sewer.

MASF

The sodium removal equipment consists of the sodium removal tank, gas handling equipment and the water rinse system together with the interconnecting piping and wiring. The treatment process is identical in both the LDCV and the SDCV. It is initiated by injection of a mixture of steam and nitrogen into the reaction vessel (referred to as the water-vapor-nitrogen process). This converts the residual sodium to sodium hydroxide and sodium dioxide. To complete the treatment process, the component and tank are rinsed with demineralized water and residues are washed down the facility's drain system. See Section D Introduction for Facility Layout.

324 SRPP

Both argon and nitrogen, demineralized water and steam services are provided for use in the SRPP. The treatment consists of water vapor added to circulating nitrogen or argon to gently effect the reaction of the alkali metal on the component being processed. To complete the treatment process after conversion of the alkali metal to hydroxides, the vessel is flushed with demineralized water. See Figure D-5 for piping layout.

## D-3 WASTE PILES

Not applicable.

D-4 SURFACE IMPOUNDMENTS

Not applicable.

D-5 INCINERATORS

Not applicable.

D-6 LANDFILLS

Not applicable.

D-7 LAND TREATMENT

Not applicable.

D-8 THERMAL TREATMENT

D-8a Thermal Treatment Description

The Alkali Metal Treatment Facility (3718-F) and the Large Sodium Fire Facility (105-DR) are treatment and storage facilities for alkali metal wastes and other ignitable or reactive wastes. The Containment Systems Test Facility (221-T) is only a treatment facility for the same types of wastes as above.

Each facility contains a thermal treatment unit. These consist of burn sheds having a small burn pan at 3718-F and containment vessels with small burn pans at 105-DR and 221-T. Also, each unit has a fume scrubber system for removal of metal oxides from the enclosure exhaust air. The 105-DR and 221-T closed vessels can also be utilized for reaction of the waste with steam for treatment.

These facilities do not fit the regulatory definition of an incinerator. When regulations addressing thermal treatment facilities are promulgated, this application will be modified.

The only wastes to be burned at all three facilities are designated as dangerous wastes solely due to their ignitable or reactive characteristics. The wastes do not contain any Principal Organic Dangerous Constituents (PODC) and during treatment do not produce any Dangerous Combustion By-Products (DCBP). Also, the wastes do not contain any of the dangerous constituents listed in WAC-173-303-9905.

D-8b Trial Burn

Trial burns will not be conducted at 3718-F, 105-DR or 221-T per Section D-8a.

D-8c Data in Lieu of Trial Burn

The requirements for data in lieu of trial burn do not apply per 40 CFR 264.340 and 270.19(2).

D-8d Determinations and Thermal Treatment Information

D-8d(1) Performance Standards

The 3718-F, 105-DR and 221-T thermal treatment units particulate matter emissions have been tested and confirmed to be below WAC 173-303-670-4(c)(ii) requirements of 180 milligrams per dry standard cubic meter.

D-8d(2) Operating Requirements

D-8d(2)(a) Analysis of Waste and Mixtures to be Burned

Table D-2 contains the characteristics of the waste to be burned at all three facilities. Each facility may treat waste listed in Table D-2 or other only ignitable or reactive waste. See Section C for further waste characterization.

**TABLE D-2**

**WASTE ANALYSIS**

| | Na | Li | NaK |
|---|---|---|---|
| Specific Heat @ m.p.(Cal/g C) | 0.515 | 1.01 | 0.23 |
| Viscosity @ 20 C(cp) | N/A | N/A | 0.94 |
| Specific Gravity @ 20 C | 0.968 | 0.534 | 0.867 |
| PODC's | None | None | None |
| DCBP's | None | None | None |

D-8d(2)(b) Description of Thermal Treatment Unit

D-8d(2)(b)(1) 3718-F

The thermal treatment unit is a fabricated building assembly of #10 steel with two reinforced plexiglass windows, stirring wand ports, and an exhaust gas scrubber system. The fume scrubber system consists of a wet dust collector (American Filter Company, Kinpactor Kinetic Scrubber, Size #4) into which water is sprayed to mix with the alkali metal oxide aerosol stream and remove the particulates; a cyclone moisture separator (American Air Filter Company, Rotoclone Separator, Type "R", Size 1); and a high velocity, high pressure exhaust fan (Buffalo Forge, Size 7E, Arr#4).

The 3718-F facility unit has a cross sectional combustion chamber area of 120 square feet with overall dimensions of 12 feet by 10 feet by 9 feet high. In this chamber, a burn pan (1.5 feet by 1.5 feet by 0.35 feet deep) filled with alkali metal waste is placed inside a catch pan (3.33 feet by 2.5 feet by 0.66 feet deep). The fume scrubber system is started and the alkali metal waste is burned as completely as possible.

Due to the batch process mode of operation, there is no auxiliary fuel system, no prime mover and no auto waste feed cut-off system.

All ductwork is #16 steel, painted internally and externally with rust inhibiting primer and alkali metal hydroxide resistant paint.

The scrubber system controls are located adjacent to the thermal treatment facility building.

D-8d(2)(b)(2) <u>105-DR</u>

The Large Sodium Fire Facility (LSFF) has three thermal treatment units. Two are identical carbon steel cylindrical containment vessels (CV#1 and CV#2) with dished tops. These are located in the Small Fire Room at 105DR. These vessels are pressure rated at 138 KPa. The cross sectional combustion chamber area is 3.56 square meters with overall dimensions of 3.7 meters high, 2.13 meters diameter and 14.1 cubic meters total volume. The entire assembly is located within a concrete building.

Centered on the floor of the unit is a reaction pan with dimensions of 50 centimeters long by 40 centimeters wide by 25 centimeters deep. This pan is filled with waste which is only ignitable or reactive and burned as completely as possible.

The third thermal treatment unit is the Air Cleaning Room (ACR) at the LSFF. The ACR has concrete walls, floor and ceiling and a volume of 340 square meters (8.1 meters by 6.3 meters by 6.6 meters high). A reaction pan is filled with the waste and allowed to react until completion.

This facility has a ventilation system connected to the containment vessels and the ACR rated at 175 cubic meters per minute of air which includes a submerged gravel scrubber, HEPA filtration and discharge through a 61-meter stack.

Due to the batch process mode of operation, there is no auxiliary fuel system, no prime mover and no auto waste feed cut-off system.

D-8d(2)(b)(3) <u>221-T</u>

The thermal treatment facility is a carbon steel cylindrical assembly with dished top and bottom heads. The cross sectional combustion chamber area is 45.6 meters with overall dimensions of 20.4 meters high and 7.62 meters diameter. It has a design pressure of 0.517 MPa at 160 degrees C. The entire vessel assembly is located within a concrete building. Centered near the bottom of the vessel is a carbon steel burn pan resting on insulating fire-brick. The pan, dimensions 1.81 meters by 2.42 meters by 0.36 meters deep, is loaded with only ignitable or reactive waste and burned as completely as possible.

The interior surfaces are coated with a modified phenolic paint and the exterior is covered with a 25.4 millimeter layer of fiber glass insulation.

Due to the batch process mode of operation, there is no auxiliary fuel system, no prime mover and no auto waste feed cut-off system. However, the burn pan does have a hinged lid which permits termination of the aerosol source on command.

D-8d(2)(c) <u>Waste to be Burned</u>

The description and analysis of the waste to be burned at 3718-F, 105-DR and 221-T is identical to the waste on which data from other burns is available. (See Section C-1 Chemical and Physical Analyses.)

D-8d(2)(d) Design Conditions

The design and operating conditions of the burn for all three units are identical to the available burn data.

D-8d(2)(e) Operating Information

D-8d(2)(e)(1) 3718-F

| | |
|---|---|
| CO level in stack gas | N/A |
| Waste feed rate | N/A |
| Combustion zone temperature | >100°F |
| Stack gas volume | N/A |
| Stack gas flow rate | 4300 CFM |
| Stack gas temperature expected | Ambient |
| Residence time for waste in combustion zone | N/A |
| HCl removal efficiency | N/A |
| Fugitive emissions expected | Metals Oxides |
| Control for fugitive emissions | Scrubber System |
| Proposed feed cutoff limits | N/A |

D-8d(2)(e)(2) 105-DR

| | |
|---|---|
| CO level in stack gas | N/A |
| Waste feed rate | N/A |
| Combustion zone temperature | >100°F |
| Stack gas volume | N/A |
| Stack gas flow rate | 6100 CFM |
| Stack gas temperature expected | Ambient |
| Residence time for waste in combustion zone | N/A |
| HCl removal efficiency | N/A |
| Fugitive emissions expected | Metal oxides |
| Control for fugitive emissions | Scrubber system |
| Proposed feed cutoff limits | N/A |

D-8d(2)(e)(3) 221-T

| | |
|---|---|
| CO level in stack gas | N/A |
| Waste feed rate | N/A |
| Combustion zone temperature | >100°F |
| Stack gas volume | N/A |
| Stack gas flow rate | 1200 CFM |
| Stack gas temperature expected | Ambient |
| Residence time for waste in combustion zone | N/A |
| HCl removal efficiency | N/A |
| Fugitive emissions expected | Metal oxides |
| Control for fugitive emissions | Scrubber system |
| Proposed feed cutoff limits | N/A |

D-8d(3) Monitoring and Inspections

D-8d(3)(a) 3718-F

Before the combustion of alkali metal waste at the Alkali Metal Treatment Facility, the safety showers and eyewashes, fume scrubber, and water supply and drain systems are checked for proper operation. Also, a burn of alkali metal waste will not occur if the prevailing winds are from the north or east.

During the alkali metal waste burn, the contents of the burn pan are stirred with wands through ports in the burn shed next to the observation windows. The fume scrubber system is also inspected for satisfactory operation.

After completion of a burn, the equipment is inspected to insure no unreacted alkali metal residue is left on the equipment.

The operating logs are maintained at the facility.

D-8d(3)(b) 105-DR and 221-T

Prior to burning dangerous wastes, the vessel, burn pan and scrubber system are inspected for integrity.

During burning, the alkali metal waste is stirred to assist in a complete burn and the scrubber system controls monitored.

Operating logs and monitoring procedures are kept at the facility.

D-8d(4) Closure

See Part B Permit Application, Sections I-1 Closure and I-2 Post Closure, for information.

D-8d(5) Treatment

D-8d(5)(a) 3718-F

The fume scrubber water effluent has been evaluated to be in compliance with WAC-173-303 without any treatment. This aqueous solution drains to the process sewer.

The residues from the thermal treatment of wastes are composed of the metal oxides and a small fraction of the unreacted metal. As part of the process, water is sprayed on this residue to complete the reaction of these metals. This solution is then further treated, by simple neutralization, to comply with WAC-173-303 (pH<12.5) before discharge to the process sewer, collected for reuse or collected for disposal.

D-8d(5)(b) 105-DR

At the completion of the burn process, which includes water sprays and washdowns, the submerged gravel scrubber water effluent and residue solution are checked for pH. The pH is confirmed to be between 2.0 and 12.5 and the solutions are discharged to a crib. No further treatment is required.

Another treatment process performed at 105-DR is reaction of the waste in a closed vessel (CV#1 or CV#2) with steam. Again, at the end of the process, the pH's of the solutions are confirmed before discharge to a crib.

D-8d(5)(c) 221-T

After completion of burning of the specified wastes, the pH of the submerged gravel scrubber water effluent is confirmed to be between 2.0 and 12.5. This solution is then discharged to a crib.

The burn pan residue is sprayed with water to complete the reaction, and the appropriate washdowns are performed. This solution is then collected in a holding tank, where the concentration and pH are determined, before diverting it for beneficial use in another area or discharging to a crib.

Another treatment process performed at 221-T utilizes the closed vessel to react the waste with steam. The effluent solutions are collected in the holding tank, checked for pH and diverted to another area for use or to a crib for disposal.

# REFERENCES

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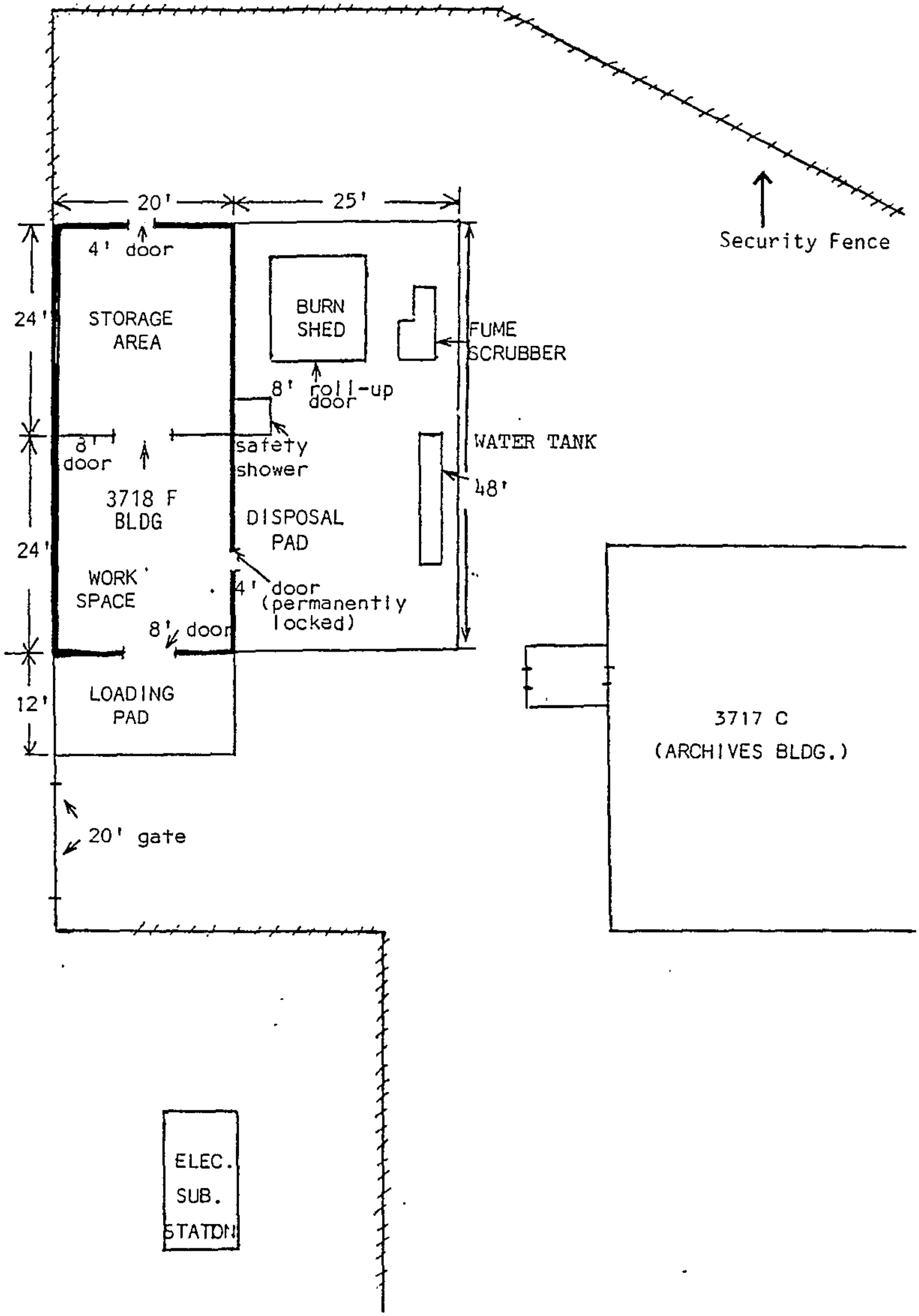


**FIGURE D-1. 3718-F ALKALI METAL TREATMENT FACILITY**

# LARGE SODIUM FIRE FACILITY

## SODIUM SPILL SYSTEMS

- LARGE TANK
  - 3400 LITER CAPACITY (UP TO 2260 kg)
  - 200 TO 650°C
- SMALL TANK
  - 45 LITER CAPACITY (UP TO 23 kg)
  - 200 TO 870°C

## TEST CELLS

- LARGE CELL - 106 $M^3$
- TWO CONTAINMENT VESSELS - 14.1$M^3$
- AIR CLEANING CELL - 336 $M^3$

## EFFLUENT HANDLING SYSTEM

- 280 $M^3$/MIN. FILTER CAPACITY
- SCRUBBER SYSTEM
- 75 M STACK

## INERT GAS SYSTEMS

- NITROGEN - 5.6 $M^3$/MIN.
- ARGON - 2.8 $M^3$/MIN.

## INSTRUMENTATION

- TEMPERATURE
- PRESSURE
- GAS ANALYSIS
- AEROSOL CHARACTERIZATION
- DATA ACQUISITION SYSTEM

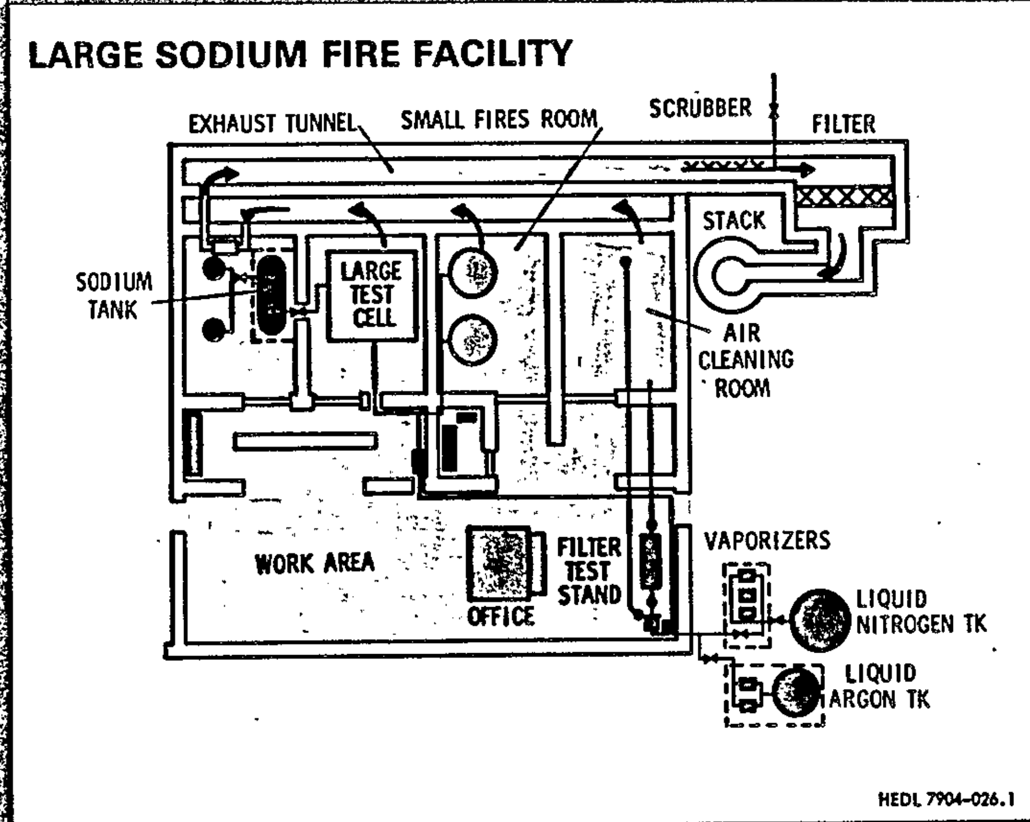


FIGURE D-2. 105-DR LARGE SODIUM FIRE FACILITY LAYOUT

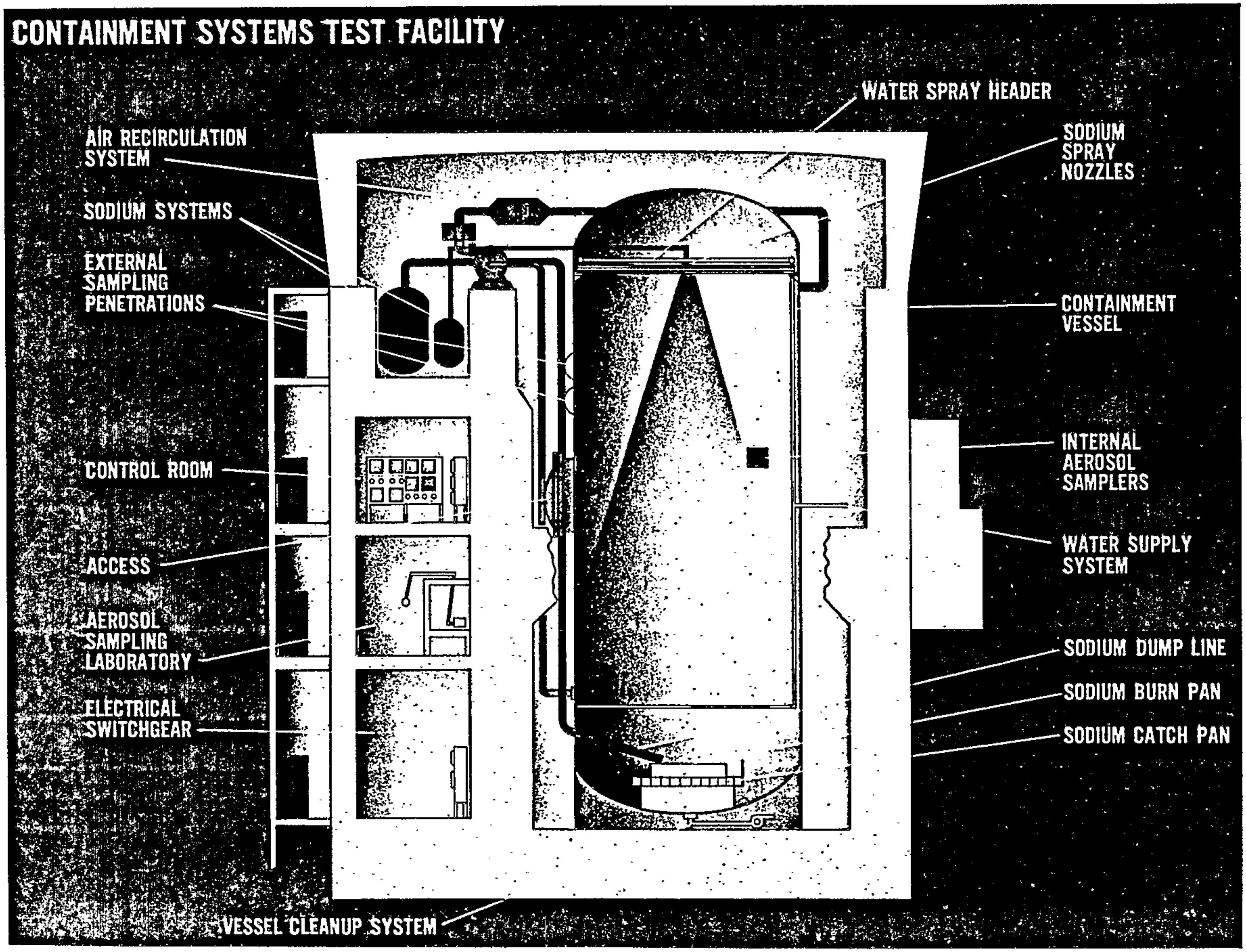


FIGURE D-3. 221-T CONTAINMENT SYSTEMS TEST FACILITY

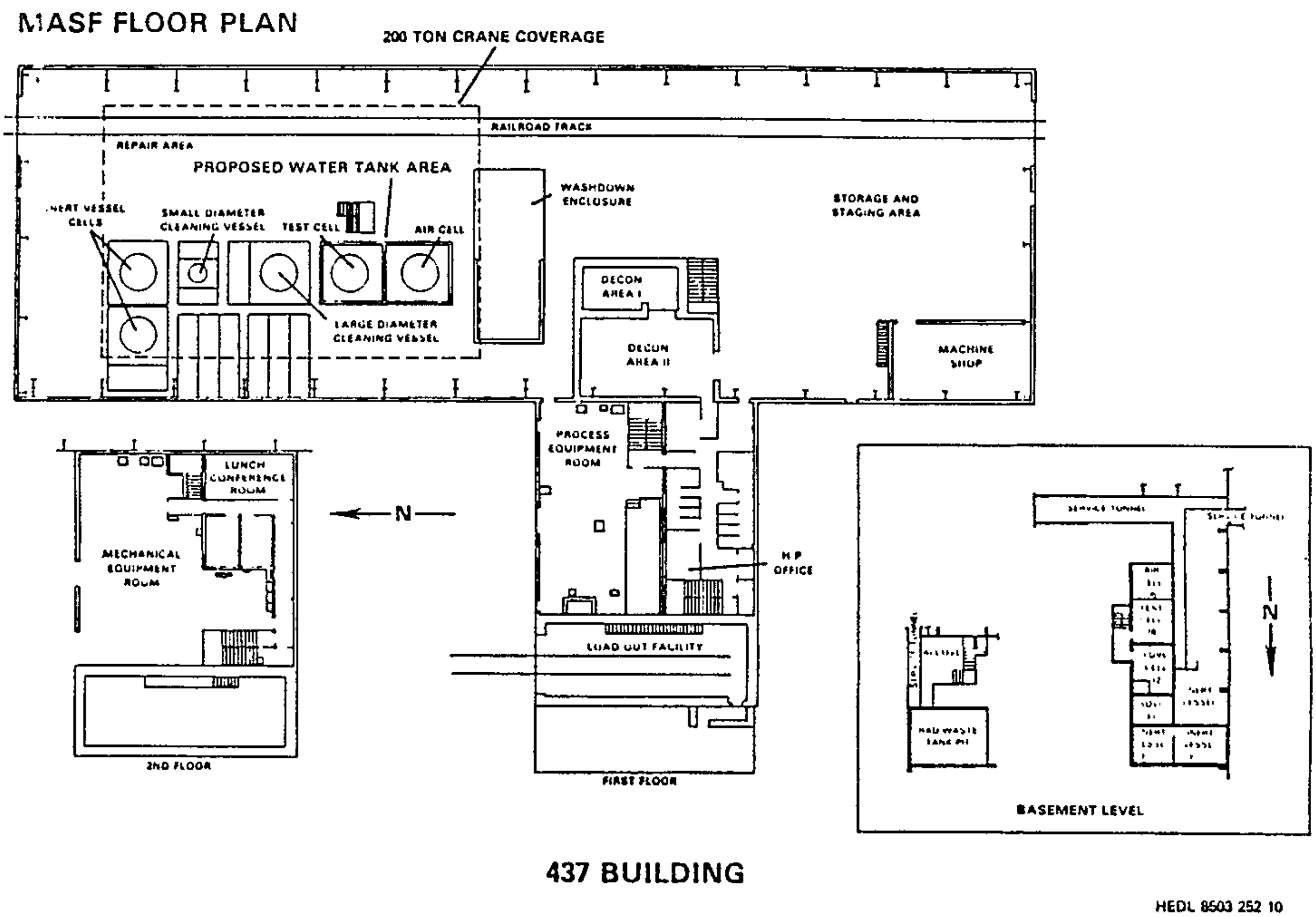


FIGURE D-4. 437 MAINTENANCE AND STORAGE FACILITY LAYOUT

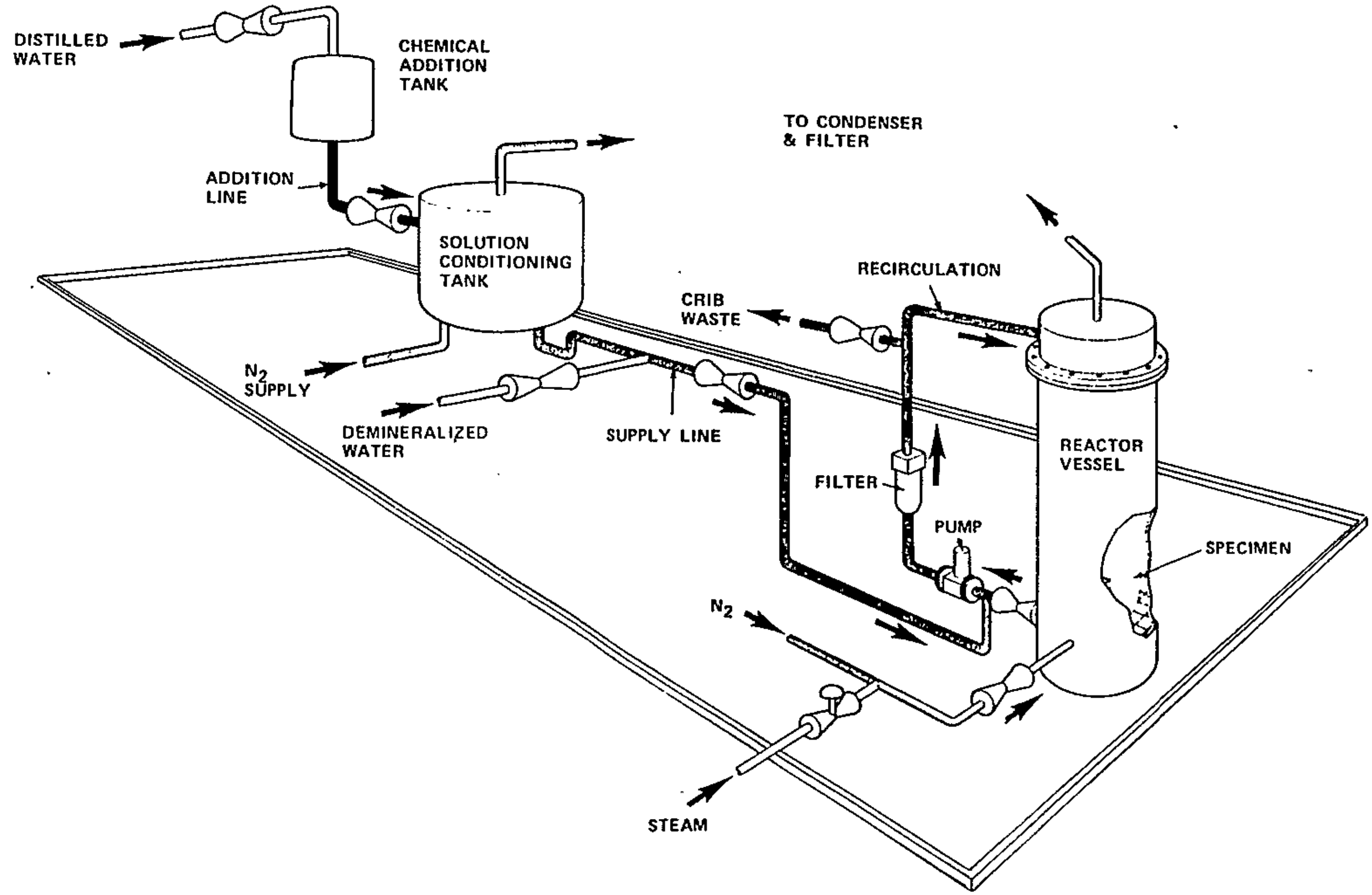


FIGURE D-5. 324 SODIUM REMOVAL PILOT PLANT SCHEMATIC DIAGRAM

# SECTION E
# GROUNDWATER MONITORING

The Alkali Metal Treatment and Storage Facilities at the Hanford Site are exempt from Subpart F - Groundwater Monitoring per 40 CFR 264.90(a) which states "...the regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous waste in surface impoundments, waste piles, land treatment units, or landfills" because no land disposal occurs in these units. Information on groundwater monitoring for other hazardous waste management units of the Hanford Site is presented in their respective Part B Application.

# SECTION F
# PROCEDURES TO PREVENT HAZARDS

F-1 SECURITY

The Hanford Site maintains an effective site security program for the protection of Government property, classified information, and special nuclear material. Security requirements for regulated wastes are met by this program. The security systems on site will prevent unknowing entry and will minimize the possibility for unauthorized entry of persons or livestock into any of the regulated waste facilities.

Unauthorized or unintended entry to regulated waste facilities is prevented by 1) 24-hour surveillance systems in the form of manned barricades at the entries to controlled access areas, or 2) fences, gates, locks, and warning signs, or 3) combinations of both. Only personnel who have been granted a security clearance from the U.S. Department of Energy-Richland Operations Office (DOE-RL) are permitted to enter controlled access areas. In addition, security provides surveillance patrols of the controlled areas.

Site personnel receive adequate training on Hanford Site security regulations in the form of required security education and on-the-job training. Procedures for ensuring personnel compliance with security requirements, providing security education, and training personnel are developed and maintained on the Hanford Site. Performance of periodic security compliance audits and inspections ensure that these procedures are followed.

F-1a Security Procedures and Equipment

F-1a(1) Twenty-four Hour Surveillance

3718-F

Security at the 300 Area is maintained by a staff of trained Security guards, who primarily monitor entry and exit from the active portion of the facility and provide 24-hour Security measures within the plant premises. The only authorized entry points are those shown on Figure F-1. There is an eight-foot high, chain-link fence topped with three strands of barbed wire along the entire perimeter of the active facility. The perimeter is also patrolled by security guards.

105-DR

The 105-DR Facility is located within the secured area of the Hanford reservation. Highway entry to this area is controlled by the Department of Energy and enforced by security guards that man the gates and provide general surveillance within the area. This system provides 24-hour surveillance for the 105-DR Facility. In addition, the facility is posted and locked.

221-T

Security at the 200 West Area is maintained by a staff of trained security guards, who primarily monitor entry and exit from the active portion of the facility and provide 24-hour security measures within the plant premises. The only authorized entry points are those shown on Figure F-2. There is an eight-foot high, chain-link fence topped with three strands of barbed wire along the entire perimeter of the active facility. The perimeter is also patrolled by security guards.

MASF

MASF is located within the 400 Protected Area. Security at the 400 Area is maintained by a staff of trained security guards, who primarily monitor entry and exit from the active portion of the facility and provide 24-hour security measures within the plant premises.

324 SRPP

The 324 Sodium Removal Pilot Plant (SRPP) is located in the 324 Building which is contained within the 300 Protected Area which in turn is contained within the 300 Limited Area. Security at the 300 Limited Area is maintained by a staff of trained security guards, who primarily monitor entry and exit from the active portion of the facility and provide 24-hour security measures within the plant premises. Further, the 300 Protected Area is guarded 24 hours and all uncleared visitors must be accompanied by an escort who has the appropriate clearance. The only authorized entry point into the 300 Protected Area is shown on Figure F-1.

F-1a(2) Access to Site

F-1a(2)(a) Barrier

3718-F

An eight-foot high, chain-link fence with three (3) lockable gates is constructed around most of the 3718-F Facility which is located within the 300 Area. The fence butts up to three (3) buildings, 335, 336 and 3718-F, which serve as the remainder of the surrounding barrier and in turn makes the barrier continuous (see Figure F-3). The buildings are metal "Butler Building" type construction and are not normally occupied. Figure F-4 shows the Alkali Metal Treatment Facility 3718-F layout.

105-DR

The 105-DR Building is located within the 100 Area which is enclosed by an eight-foot high, chain-link fence topped with three strands of barbed wire. Two gates allow access to the area and are kept locked during off shifts (See Figure F-5). The entire Large Sodium Fire Facility (LSFF) is contained within the 105-DR Building itself, with the exception of the submerged gravel gas scrubber. The scrubber is located within a sealed enclosure on the south side of the 105-DR Building and is connected to the rest of the facility by an exhaust air duct. No inadvertent access is possible due to the facility building and the scrubber enclosure. Figure F-6 shows the Large Sodium Fire Facility (LSFF) 105-DR layout.

221-T

The 221-T Building is located within the 200 West restricted area described above in F-1a(1). The entire Containment Systems Test Facility (CSTF) is contained within the 221-T Building itself. No inadvertent access is possible due to the facility building. Figure F-7 shows the 221-T Containment Systems Test Facility layout.

MASF

Double eight-foot high, chain-link fences topped with three strands of barbed wire are constructed around the 400 Protected Area (Figure F-8). Access to the site requires passage through a guardhouse and persons seeking entrance must have an appropriate security clearance. Further, motion-sensing detectors used by security guards are located around the inner perimeter fence.

324 SRPP

Double eight-foot high, chain-link fences topped with three strands of barbed wire are constructed around the 300 Protected Area which is located within the 300 Limited Area. Access to the area requires passage through a series of two guardhouses and persons seeking entrance must have an appropriate security clearance or be with an authorized escort. Further, motion-sensing detectors used by security guards are located around the inner perimeter fence.

F-1a(2)(b) Means to Control Entry

3718-F

The buildings and fence gates are normally kept locked. Other than authorized facility users, accesses are all escorted. The entire facility including the fence is located inside the 300 Area guarded facility described in F-1a(1). The accesses to the three (3) buildings, 335, 336 and 3718-F, which serve as part of the barrier to the facility, are kept locked at night and when not in use. Any unauthorized personnel or security breaches are immediately reported to the on-call supervisor.

105-DR

The 105-DR Building is kept locked when not occupied. Other than authorized facility users, guests are all escorted.

221-T

The 221-T Building is kept locked on off-shifts. Other than authorized facility users, accesses are all escorted A guard patrols the site on off-shifts. Any unauthorized personnel or security breaches are immediately reported to the on-call supervisor.

MASF

The MASF Building is kept locked on off-shifts. Other than authorized facility users, accesses are all escorted. Any unauthorized personnel or security breaches are immediately reported to the on-call supervisor.

324 SRPP

The 324 Building is kept locked on off-shifts. Other than authorized facility users, accesses are all escorted. Any unauthorized personnel or security breaches are immediately reported to the on-call supervisor.

F-1a(3) Warning Signs

3718-F

Signs posted on the facility fence and building perimeter barrier, bear the legend, "Danger - Unauthorized Personnel Keep Out." (See Figure F-9) The signs are ten inches by fourteen inches and lettered as follows:

"Danger" has two and one-eighth inch high white letters on a red background; "Unauthorized Personnel Keep Out" has one and one-eighth inch high black letters on a white background.

Signs are posted on each gate, each exterior building door of the buildings forming part of the periphery around the facility, on both sides of exterior fence corners, and at least every 75 feet on the fence perimeter. This makes the signs visible from any approach to the active portion of the facility and legible from a distance of at least 50 feet.

105-DR

Signs bearing the legend "Dangerous-Unauthorized Personnel Keep Out" are posted on each of the two doors which allow facility access (See Figure F-9). Signs are lettered as described in F-1a(3).

221-T

No alkali metal waste is currently treated at the 221-T CSTF; therefore, no warning signs are necessary at this time. If at a future time, 221-T CSTF begins to accept alkali metal waste for treatment, appropriate warning signs will be posted in accordance with WAC-173-303-310(2)(a).

MASF

The Small Diameter Cleaning Vessel (SDCV) and Large Diameter Cleaning Vessel (LDCV) that will be used to treat radioactive and nonradioactive waste alkali metals is located in a radiation zone within MASF. "Radiation Zone" signs are posted at all entries to radiation zones. Personnel must be familiar with the Radiation Work Procedure (RWP) prior to entry into the radiation zone. The RWP specifies the radiological conditions in the radiation zone, protective clothing requirements, dosimetry requirements, and any respiratory equipment requirements.

324 SRPP

The Sodium Removal Pilot Plant is not in operation at the present. If, at a future time, the SRPP begins to accept alkali metal waste for treatment, warning signs will be posted in accordance with WAC 173-303-310(2)(a).

F-1b Waiver

A waiver of the requirements stated in WAC-173-303-310(1), (1)(a), and (1)(b) [40CFR264.14(a)] is not requested.

## F-2 GENERAL INSPECTION PLAN

### F-2a General Inspection Requirements

3718-F

The intent of this General Inspection Plan is to ensure that potential problems at the Alkali Metal Treatment Facility (3718-F) are identified and corrected before they endanger human health or the environment. This plan addresses the requirements of WAC-173-303-320(1) and (2)(40CFR264.15), -340(1)(d) [40CFR264.32(d)] and -806(4)a(v) [40CFR270.14(b)], and provides inspection requirements and an inspection schedule. A copy of the inspection plan is maintained at the 3718-F Facility.

Regular inspections of the facility are conducted to prevent equipment malfunction, structural deterioration, operator errors, and discharges that could cause or lead to the release of hazardous waste constituents or that could threaten human health or the environment. Records of inspections and an inspection log containing the date and time of the inspection, the printed name and handwritten signature of the inspector, a notation of the observations made, and the date and nature of actions and repairs taken are maintained at the 3718-F Facility. Figure F-10 shows a typical inspection form to be utilized for the 3718-F Facility. These records are retained for a period of at least three years from the date of inspection.

105-DR, 221-T, MASF, and SRPP

No alkali metal waste is currently stored or treated at the 105-DR, 221-T, MASF, and 324 SRPP Facilities. However, a general inspection plan is maintained at these facilities which will be implemented the facilities begin accepting alkali metal waste for treatment and/or storage. The general inspection plan for these facilities will have the same general inspection requirements as those listed for 3718-F.

F-2a(1) Type of Problems

Table F-1 contains the schedule for inspection of operating and structural equipment, safety emergency equipment, security devices, alkali metal inventory, storage area, and the alkali metal container at 3718-F. Inspection items at 105-DR, 221-T, MASF, and 324 SRPP will be similar to those listed for 3718-F in Table F-1. The items listed in Table F-1 are inspected because of their role in preventing, detecting, or responding to environmental or human health hazards. Provided with each item is a list of potential problems that are checked during inspections.

F-2a(2) Frequency of Inspection

3718-F

Weekly inspections of the alkali metal inventory and container and storage area integrity are conducted on the last working day of each week. Persons performing this procedure are qualified Waste Systems Operations (WSO) Technicians or under the direct supervision of a qualified WSO Technician for training purposes. Records of the alkali metal inventory are kept at the 3718-F Facility. Figure F-11 shows a typical alkali metal transfer/disposal form.

Annual inspections or audits are conducted in accordance with WAC-173-303-395(1)(d) (40CFR264.17) by WHC safety organizations to assess the overall condition and operation of the facility. The personnel conducting the annual audit are trained in industrial safety, fire prevention and hazardous waste storage and treatment. Items inspected include building structure integrity, those items listed in Table F-1, and the AMTF records.

The Quality Assurance department conducts periodic audits to verify that the facility is being operated in accordance with the quality assurance program, the general inspection plan, and the facility operating procedures. The main thrust of this audit is the review of the records relating to the operation of the facility. The results of these audits are documented and require corrective action of observed problems.

The inspection schedule and requirements for the general inspection plan reflects either a direct regulatory requirement or are the results of a probability estimate of possible deterioration of the equipment involved and the probability of an environmental or human health incident if any deterioration, malfunction or operator error were to go undetected between inspections. Remedial actions to correct problems will be noted in the inspection logs.

The AMTF (3718-F) is subject to weekly, monthly and annual inspections. There is no basis to reasonably expect that any of the equipment in this area would be subject to deterioration in the interim that could lead to an incident endangering public health or the environment. Any discrepancies found during inspection are corrected immediately and reported to the WSO supervisor.

<u>105-DR, 221-T, MASF, and SRPP</u>

The inspection schedule and requirements for the general inspection plan will reflect either a direct regulatory requirement or will be the results of a probability estimate of possible deterioration of the equipment involved and the probability of an environmental or human health incident if any deterioration, malfunction or operator error were to go undetected between inspections.

The facilities are currently subject to annual safety inspections. Records are maintained by the HEDL Safety and Fire Protection office. When these facilities begin accepting alkali metal waste, weekly inspections will be implemented as required under the general inspection plans. There is no basis to reasonably expect that any of the equipment in these areas would be subject to deterioration in the interim that could lead to an incident endangering public health or the environment. Any discrepancies found during inspections are corrected immediately and reported to the appropriate facility supervisor.

F-2b Specific Facility Inspection Requirements

F-2b(1) Container Inspection

3718-F

Weekly inspections of containers and container storage area are conducted. Containers are monitored for deterioration caused by corrosion or other factors. All waste packages are monitored to ensure that they are double contained. The storage area is checked for the presence of spilled material. If spilled material is present, corrective activities are initiated to clean up and limit the spread of material.

105-DR and 221-T

When 105-DR or 221-T begin accepting alkali metal waste for treatment and/or storage, weekly container inspections will be conducted in accordance with the inspection requirements listed for 3718-F.

F-2b(2) Tank Inspection

105-DR, 221-T

3718-F, 105-DR and 221-T do not use tanks for treatment or storage of alkali metal waste.

3718-F

The 3718-F facility contains three tanks used for reaction of alkali metals. These tanks are inspected prior to and during use to prevent spills and leakage. The tanks are also inspected during the weekly facility inspection.

MASF

The Small Diameter Cleaning Vessel (SDCV) and Large Diameter Cleaning Vessel (LDCV) are housed in the MASF and will be monitored continuously by radiation detectors and leak detectors located in the sump. Tank leaks would be detected immediately due to these detectors.

324 SRPP

The tank at 324 SRPP will be visually inspected to detect signs of corrosion and leaking of fixtures and seams. The tank surrounding area will also be inspected weekly to detect signs of leakage.

F-2b(3) Waste Pile Liner Inspection

Not applicable.

F-2b(4) Waste Pile Inspection

Not applicable.

F-2b(5) Surface Impoundment Inspection

Not applicable.

F-2b(6) Thermal Treatment Unit Inspection

F-2b(6)(a) Thermal Treatment Unit and Associated Equipment

3718-F

Before the treatment of alkali metal waste at the Alkali Metal Treatment Facility, the safety shower and eye wash, fume scrubber, water supply and drain systems are inspected for proper operation. The prevailing wind direction is also ascertained, as a burn of alkali metal waste will not occur if winds are from the north or east. The operating logs are maintained at the facility.

During the alkali metal waste burn, the contents of the burn pan are stirred with wands through ports in the burn shed next to the observation windows. The fume scrubber system is inspected to insure satisfactory operation during the burn.

The thermal treatment unit particulate matter emissions have been tested and confirmed to be below WAC-173-303-670-4(c)(ii) [40CFR264.343(c)] requirements of 180 milligrams per dry standard cubic meter and are not monitored.

After completion of a burn, the equipment is inspected to insure no residual, unreacted alkali metal is left on the equipment.

105-DR and 221-T

Before treatment of alkali metal waste at the LSFF 105DR, the thermal treatment unit, safety shower, eyewash, scrubber, water supply, and drain system are inspected for proper operation.

During the alkali metal waste burn, the reaction pan is visually inspected. Thermocouples within the thermal treatment unit allow monitoring of temperatures during the burn. The fume scrubber system is inspected to insure satisfactory operation during the burn.

The thermal treatment unit particulate matter emissions have been tested and confirmed to be below WAC 173-303-670-4(c)(iii) requirements of 180 milligrams per dry standard cubic meter and not monitored.

After completion of a burn, the equipment is inspected to insure no residual, unreacted alkali metal is left on the equipment.

MASF and 324 SRPP

Thermal treatment units are not operated at MASF and 324.

F-2b(6)(b) Thermal Treatment Unit Waste Feed Cutoff System and Associated Alarms

The 3718-F, 105-DR and 221-T Facilities' incinerators are operated as batch processes; therefore, they have no waste feed cutoff system or associated alarms.

F-2b(7) Landfill Inspection

Not applicable.

F-2b(8) Land Treatment Facility Inspection

Not applicable.

F-3 WAIVER OF DOCUMENTATION OF PREPAREDNESS AND PREVENTION REQUIREMENTS

F-3a Equipment Requirements

The 3718-F, 105-DR, 221-T, MASF, and 324 SRPP are equipped with communication and emergency equipment for control of mishaps. These are all alkali metal facilities where water is not used for fighting alkali metal fires.

F-3a(1) Internal Communications

The 3718-F, 105-DR, 221-T, MASF, and 324 SRPP are all small facilities where most communication is direct. MASF and 324 SRPP have intercommunication systems for conversation with other parts of the building.

F-3a(2) External Communications

The 3718-F, 105-DR, 221-T, MASF, and 324 SRPP are all equipped with telephones for summoning assistance. Pull boxes would bring fire fighter assistance as would smoke detector alarm systems at each of the facilities.

F-3a(3) Emergency Equipment

The 3718-F, 105-DR, 221-T, MASF, and 324 SRPP all are equipped with dry type portable fire extinguishers. Decontamination equipment is regularly used in clean-up following waste treatment operations. Section G-5 gives a more detailed listing of emergency equipment located at these sites.

F-3a(4) Water for Fire Control

There are nearby fire hydrants for each of the 3718-F, 105-DR, 221-T, MASF, and 324 SRPP. However, the fire department would use dry chemicals for fighting alkali metal fires. They are equipped and trained to use dry chemicals.

F-3b Aisle Space Requirement

Aisle space is available at each of the storage or treatment facilities 3718-F, 105-DR, 221-T, MASF, and 324 SRPP. This is a normal safety requirement throughout the operation as well as an operational need for convenience in moving waste and equipment.

F-4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT

F-4a Unloading Operations

Alkali metals are always loaded and unloaded in their sealed shipping containers at ambient temperatures. Sodium and lithium are solid at room temperatures. NaK is a eutectic alloy containing 78 percent potassium and 22 percent sodium which is liquid at room temperature. NaK is handled in gas tight containers with an inert gas cover. Loading and unloading accidents do not pose unusual hazards to personnel or to the environs.

Unloading operations will be dependent upon the size, weight, and radiation dose rate of equipment being moved. Small equipment with low dose rate may be moved by hand truck. Shielding in the form of a cask will be required for moving items with high dose rates. Casks may weigh several tons. Cask design and moving procedures are reviewed and approved by Operational Safety prior to use.

F-4b Run-off

Alkali metals are stored indoors and in sealed containers. Run-off is not a problem. Storm water is carried away from the facility because it is slightly higher ground than surrounding buildings and roadways.

Run-off from the treatment area at 3718-F is caught in a gutter which drains to the 300 Area Process Sewer. The facility sits on high ground which causes storm water to drain away.

There will be no run-off from other alkali metal facilities since all handling areas are indoors.

F-4c Water Supplies

No water supplies are threatened by these facilities. Wastes are discharged to a nearby Process Sewer. Alkali metal hydroxides or salts will be within prescribed limits when discharged to the sewer. Waste spills will be collected within each of the facilities.

F-4d Equipment and Power Failure

Equipment failure or power outage could cause the exhaust system to shut down. In that event, the fire would be allowed to extinguish itself. Alkali metal fires tend to be self extinguishing because the oxides fall back on the burning surface. The technician attending the facility must keep this crust broken up or the fire will go out.

If no burn was in progress, a power failure or equipment malfunction would merely be an operational inconvenience. The work in progress would be interrupted and, if necessary to ensure personnel and environmental protection, the alkali metal would be returned to storage containers.

Power failure will result in shutdown of operations at MASF or 324 SRPP. Such an interruption will be no more than an operational inconvenience. Waste treatment or other operations would simply stop until power was available. Equipment failure might discharge moist nitrogen to the room. If that occurred, all personnel would leave and don appropriate protective clothing which might include self-contained breathing apparatus if oxygen deficiency was a possibility. All exhaust gases are filtered before being vented to the atmosphere to prevent the discharge of alkali metal oxides and other materials.

### F-4e Personnel Protection Equipment

Protective clothing is a requirement when reacting alkali metals. A hard hat with an attached face shield, safety goggles, fire retardant treated coveralls, and chromeleather or rubber gautlet gloves are minimum standard wearing apparel. In addition, toe protection is required when handling heavy objects. Fire extinguishers, a safety shower and an eye wash station are available for emergencies. As an added precaution, two persons must be present when alkali metals are being treated.

## F-5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

### F-5a Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Wastes

Alkali metals must be protected from water to prevent premature and violent reaction. It is normally difficult to ignite alkali metals and difficult to keep a fire burning. Being metals, they are good heat conductors so the entire mass must be brought to ignition temperature. The fire will be self extinguishing unless some action is taken to break the crust of oxide formed when the oxide falls back on the burning metal surface.

### F-5b General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Wastes

Violent reactions are always a threat. Alkali metals react with water to release hydrogen which can be ignited by the heat of reaction between the metal and water. For this reason, drums are flushed with inert gas prior to heating to melt the metal. Tests with a small amount of sodium are conducted before reacting sodium with liquids.

Reactions or fires that might produce fumes are conducted in an enclosed burn room with the exhaust scrubber in operation. Treatment reactions are only conducted when there are winds from the south or west so that fumes would be blown away from escape routes and other personnel.

Accidental ignition of alkali metals is prevented by storing them in containers protected from moisture. The alkali metals are not apt to ignite spontaneously unless moisture is present and, of course, they cannot burn without air.

Alkali metals are not purposely mixed but they are compatible with one another. Equipment design as well as practices and procedures are employed to prevent premature contact between alkali metals and moisture.

F-5c Management of Ignitable or Reactive Wastes in Containers

The 3718-F Facility is about 800 feet from the shoreline of the Columbia River which is the east boundary of DOE property at the 300 Area.

The 437 MASF Facility is located four miles from the south or east boundary of the Hanford reservation.

The 105-DR Large Sodium Fire Facility is five miles from a plant boundary to the north or northwest and further in other directions.

The 324 Building is located 1,000 feet from the Columbia River which forms the east boundary of the Hanford reservation in this vicinity.

The 221-T Facility is located within the 200 West Area and is six miles from the west boundary of the Hanford reservation and further from any other boundary.

F-5d Management of Incompatible Wastes in Containers

To insure that all packages of alkali metals are properly packaged and labeled before material is moved:

Sodium Waste must be packaged in sealed metal cans containing sufficient sodium chloride or sodium carbonate to cover the sodium to prevent any exposure to air. The package must also be labeled "Sodium" and have the amount of sodium within the container clearly.

Lithium Waste must be packaged in sealed metal cans containing sufficient calcium carbonate or graphite to cover the lithium to prevent any exposure to air. Package must also be labeled "Lithium" and have the amount of lithium within the container clearly displayed.

NaK Waste must be packaged in a rigid steel container equipped with connections for flushing and filling with an inert gas and a pressure gage to indicate the amount of gas covering the NaK. Container must be sealed and indicate the amount of gas covering the NaK. Container must be sealed and indicate a positive cover gas pressure of three to five psig. The container must also be labeled "NaK" and have the the amount of NaK within the container clearly displayed. Very small amounts of NaK absorbed on rags during maintenance procedures are packaged in sealed metal containers.

F-5e <u>Management of Ignitable or Reactive Wastes in Tanks</u>
See Section D Process Information for detailed description on reaction processes.

F-5f <u>Management of Incompatible Wastes in Tanks</u>
Ignitable or reactive wastes are not stored in tanks.

F-5g <u>Management of Ignitable or Reactive Wastes Placed in Waste Piles</u>
Ignitable or reactive wastes are not placed in waste piles.

F-5h <u>Management of Incompatible Wastes Placed in Waste Piles</u>
Ignitable or reactive wastes are not placed in waste piles.

F-5i <u>Management of Ignitable or Reactive Wastes Placed in Surface Impoundments</u>
Ignitable or reactive wastes are not placed in surface impoundments.

F-5j <u>Management of Incompatible Wastes Placed in Surface Impoundments</u>

Ignitable or reactive wastes are not placed in surface impoundments.

F-5k <u>Management of Ignitable or Reactive Wastes Placed in Landfills</u>

Ignitable or reactive wastes are not placed in landfills.

F-5l <u>Management of Incompatible Wastes Placed in Landfills</u>

Ignitable or reactive wastes are not placed in landfills.

F-5m <u>Management of Ignitable or Reactive Wastes Placed in Land Treatment Units</u>

Ignitable or reactive wastes are not placed in land treatment units.

F-5n <u>Management of Incompatible Wastes Placed in Land Treatment Units</u>

Ignitable or reactive wastes are not placed in land treatment units.

TABLE F-1

3718-F SAFETY INSPECTION LOG

| INSPECTION ITEM | MINIMUM FREQUENCY | POTENTIAL PROBLEMS |
|---|---|---|
| 1. Alkali Metal Inventory | Weekly(1) | Records |
| 2. Alkali Metal Containers | Weekly | Ruptured or bulged, excesssive corrosion, incorrect or illegible labels, single barrier containers contacting floor |
| 3. Storage Area | Weekly | Spills, equipment and structural integrity |
| 4. 3718-F | Weekly | Facility housekeeping |
| 5. Safety and fire equipment | Monthly, prior to disposal activity usage | Accessibility, usage malfunction, cleanliness, |
| 6. Personnel safety shower and eye wash | Monthly, prior to disposal activity | Equipment integrity, completeness and functionality |
| 7. Fume scrubbers | Prior to disposal activity | Attachment, functionality |
| 8. Gates and fence | Monthly | Deterioration, damage |
| 9. Wind direction | Prior to disposal activity | Prevailing winds from north or east |
| 10. Water supply and drain system | Prior to disposal activity | Functionality |

(1) Inspected and recorded on the last working day of the week.

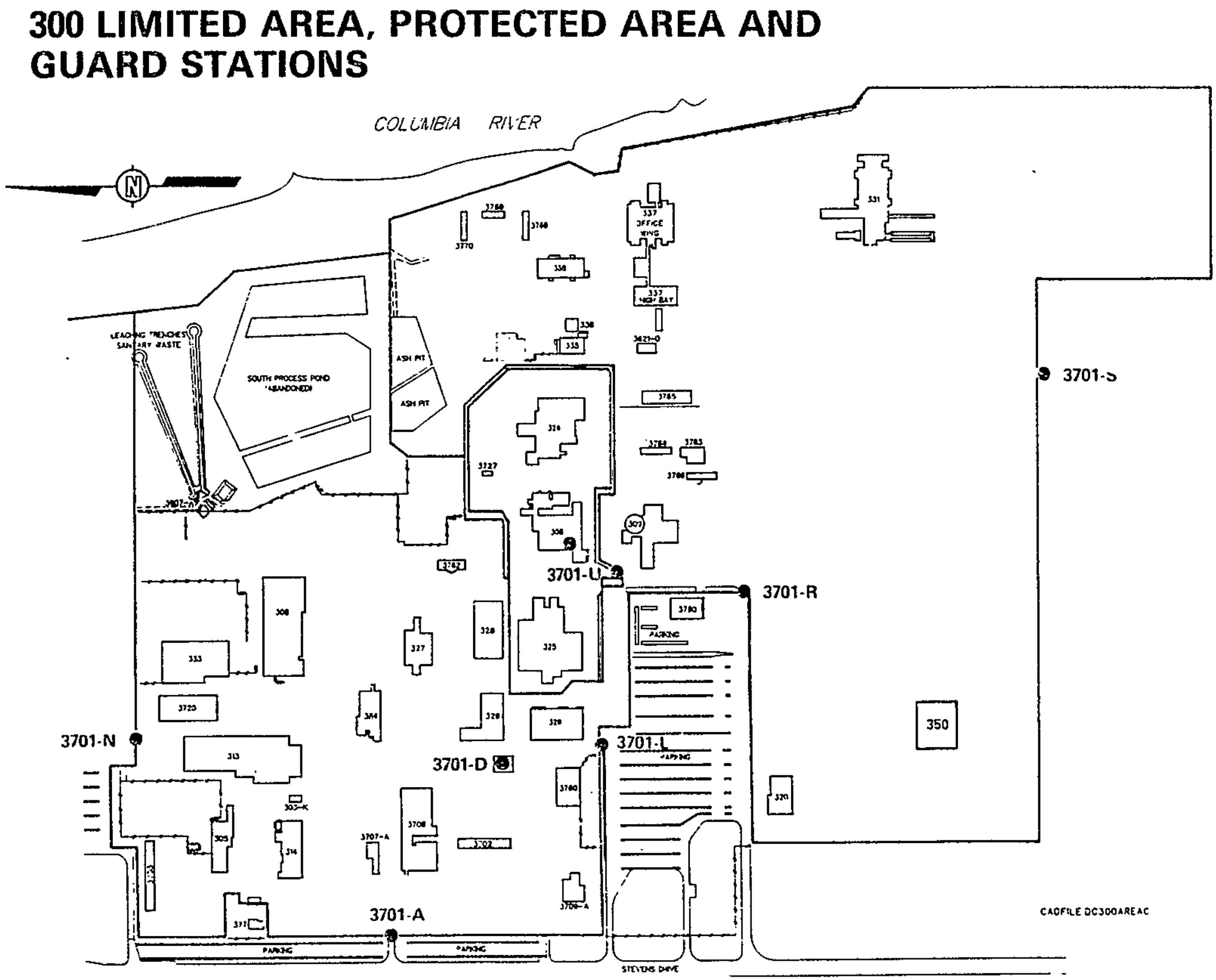


FIGURE F-1. 300 AREA AUTHORIZED ENTRY POINTS

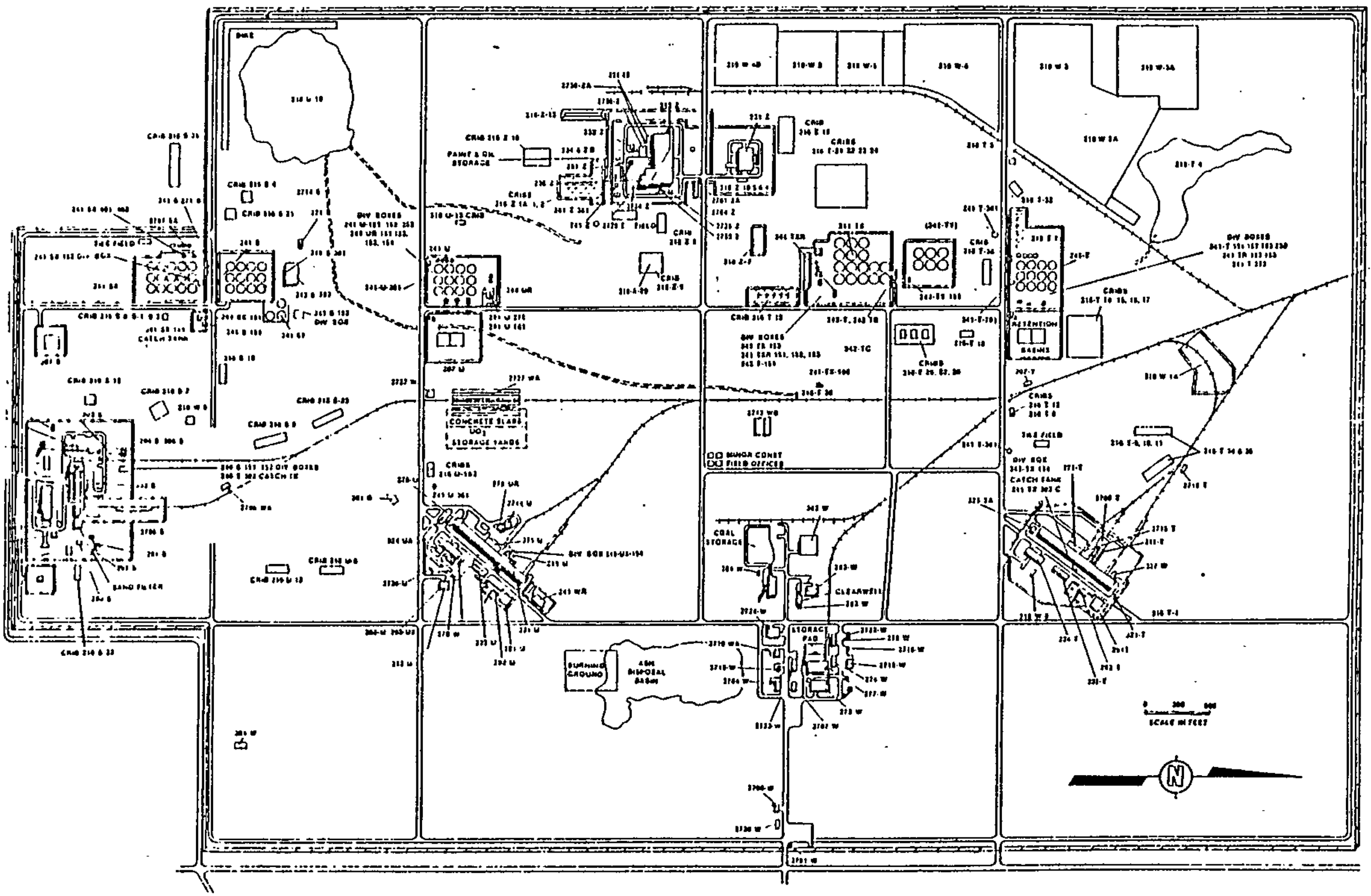


FIGURE F-2. 200 WEST AREA AUTHORIZED ENTRY POINTS

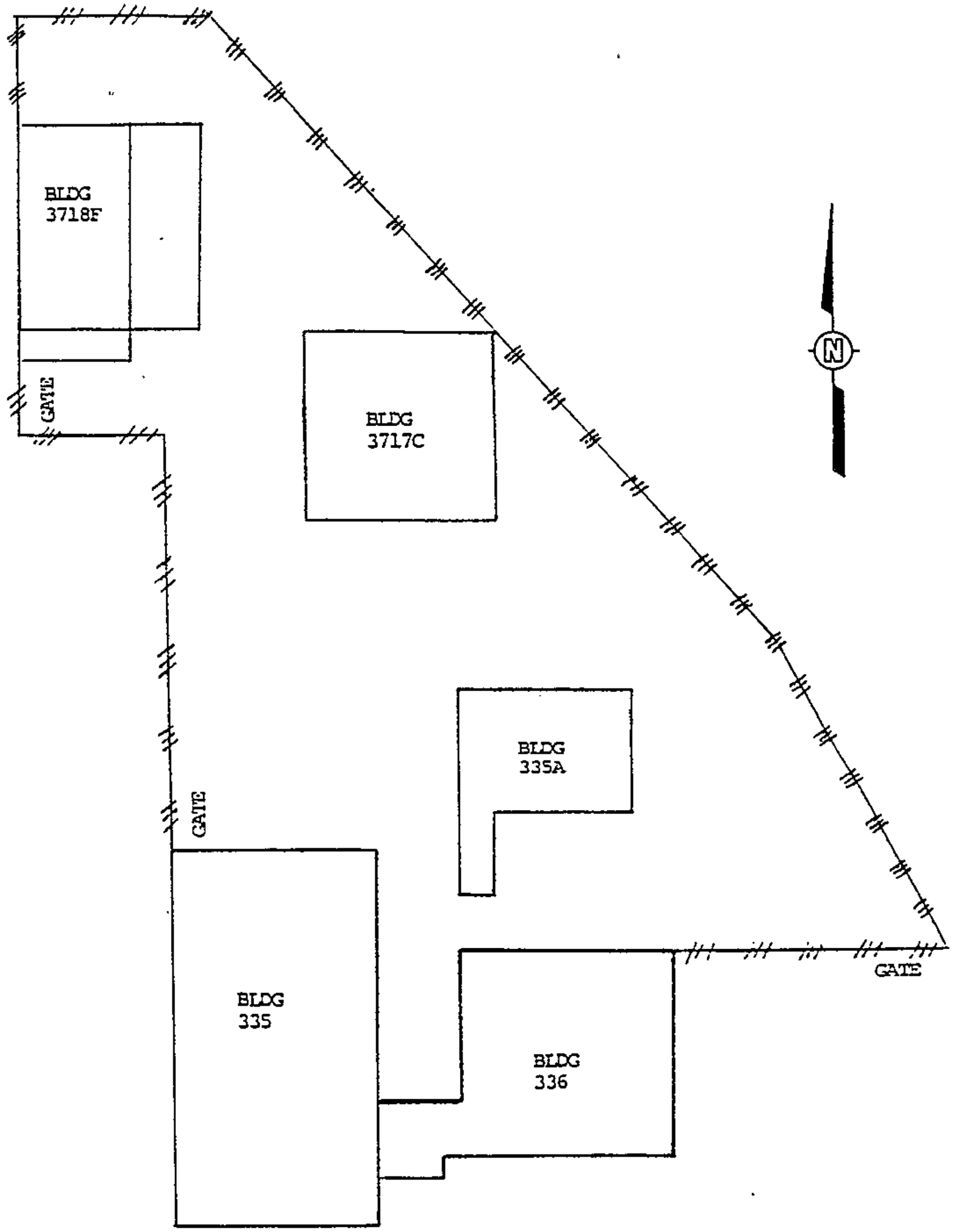


FIGURE F-3. ALKALI METAL TREATMENT FACILITY (3718-F)

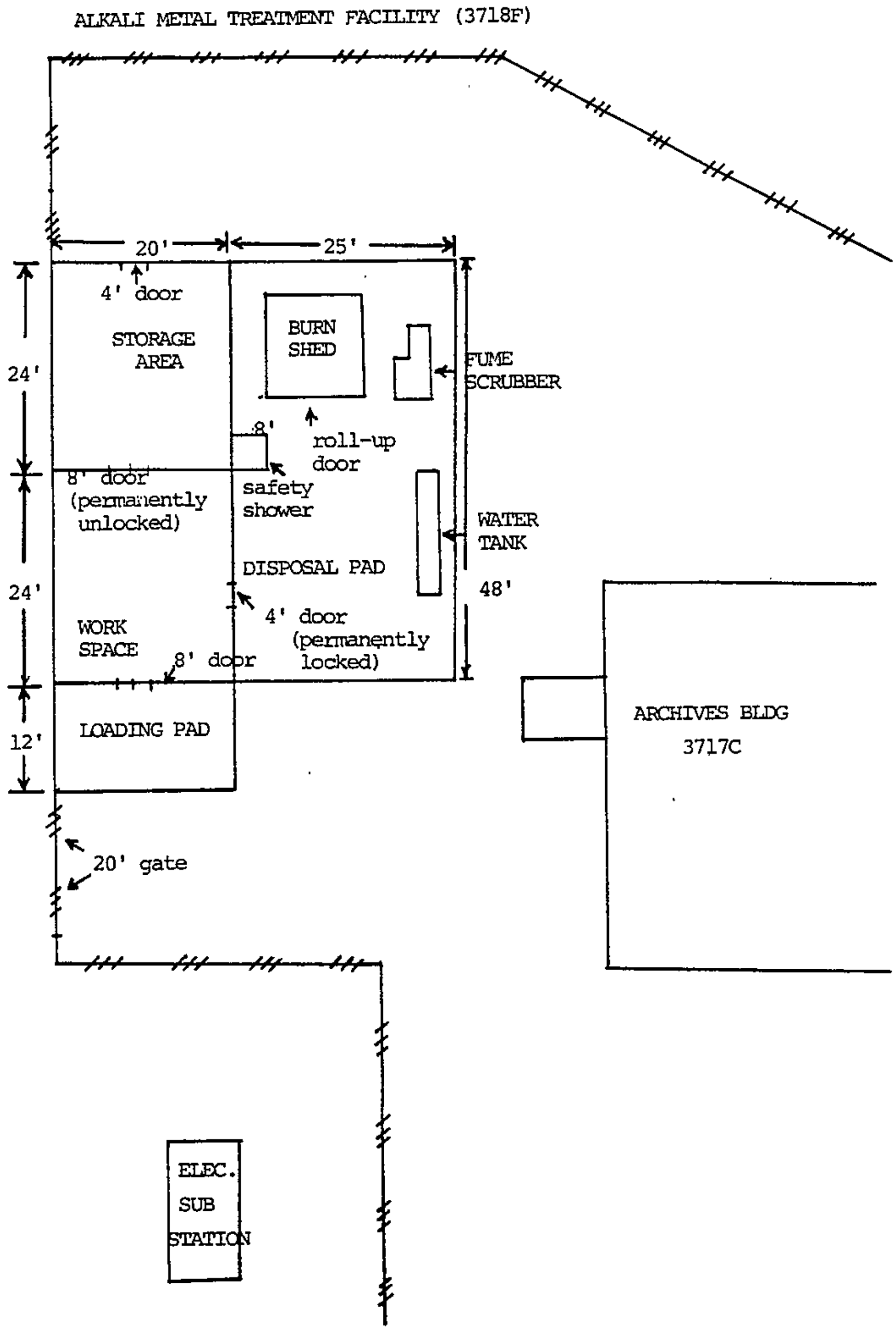


FIGURE F-4. 3718-F ALKALI TREATMENT FACILITY LAYOUT

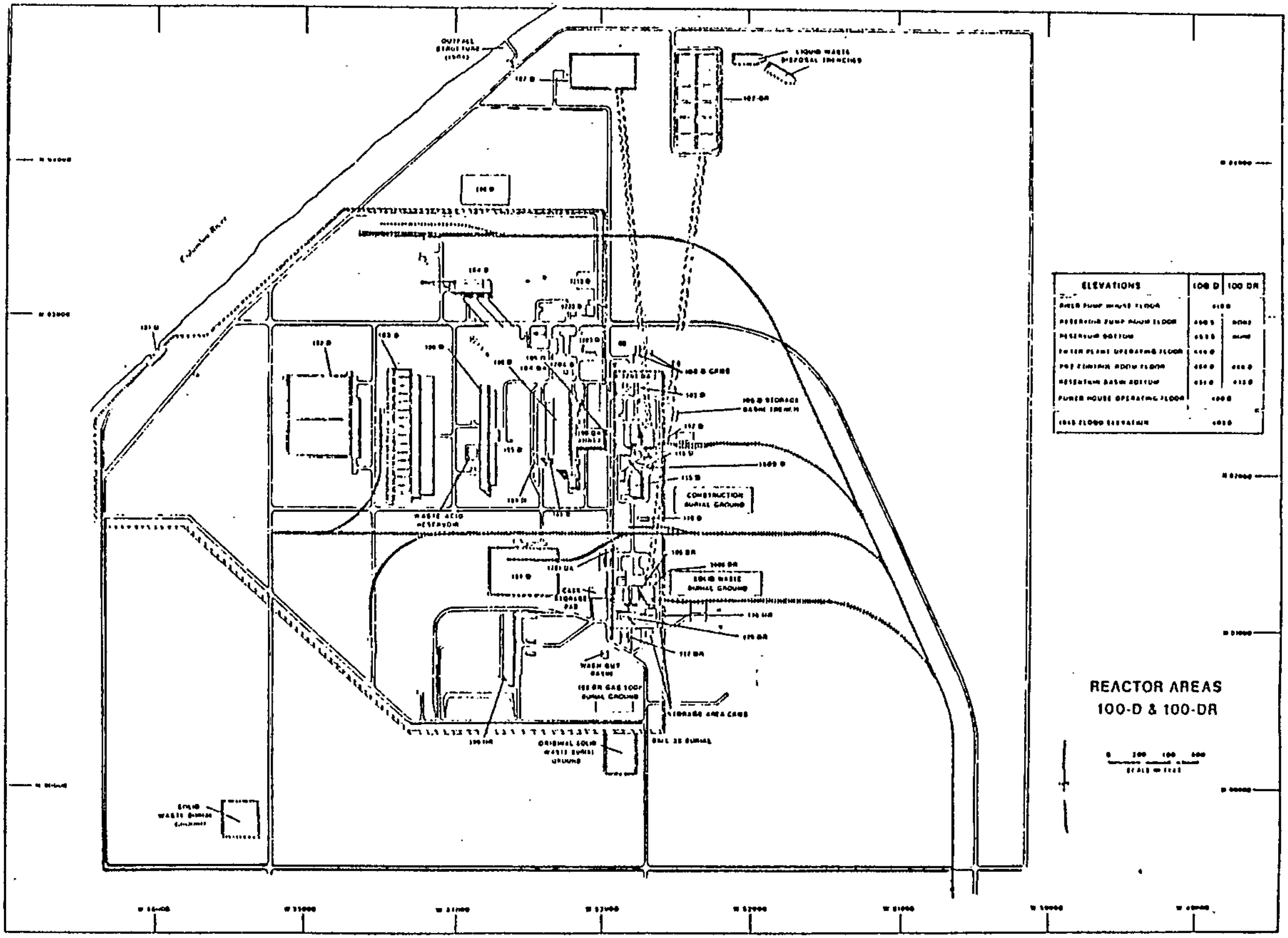


FIGURE F-5. 100-DR AREA LAYOUT

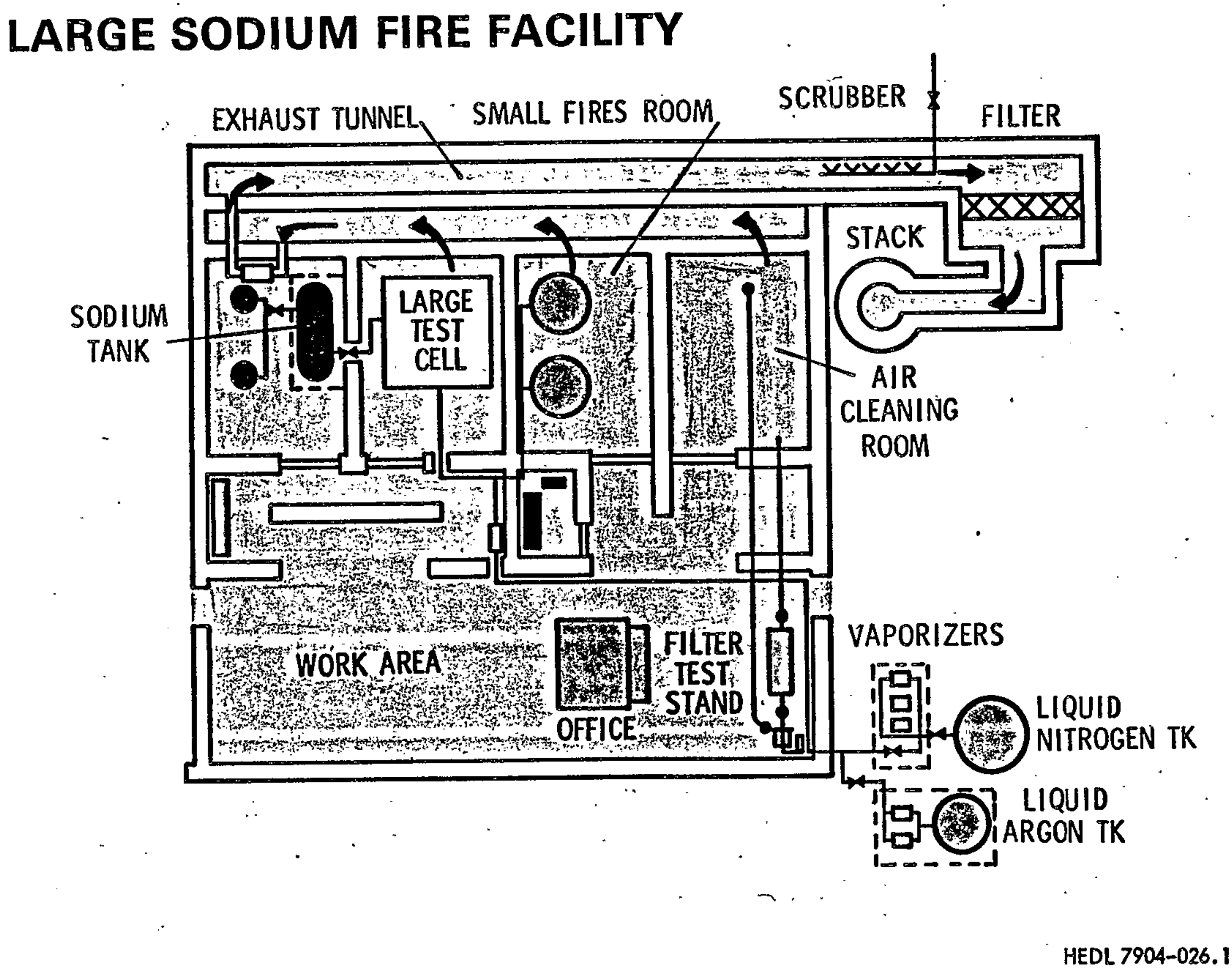


FIGURE F-6. 105-DR LARGE SODIUM FIRE FACILITY LAYOUT

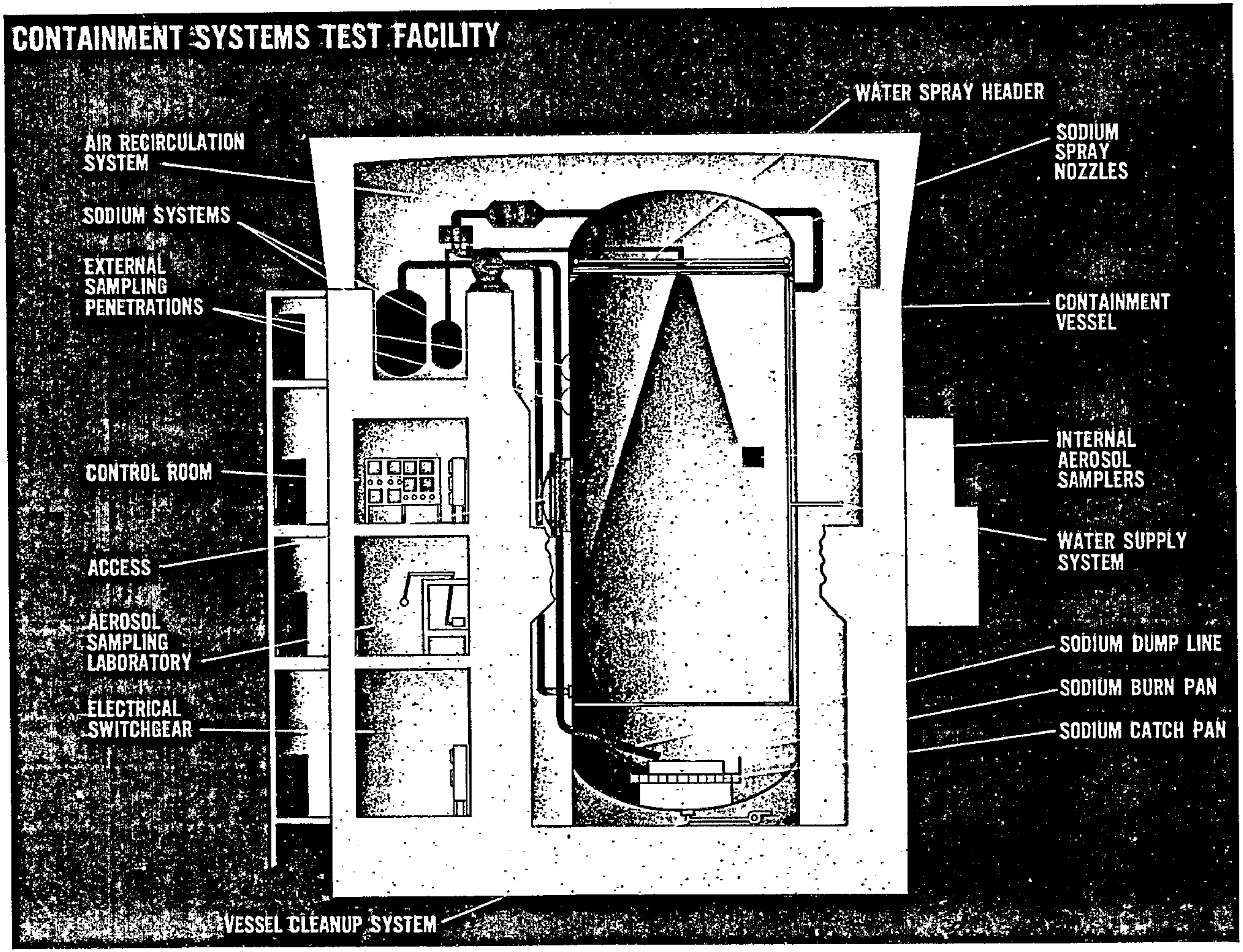


FIGURE F-7. 221-T CONTAINMENT SYSTEMS TEST FACILITY

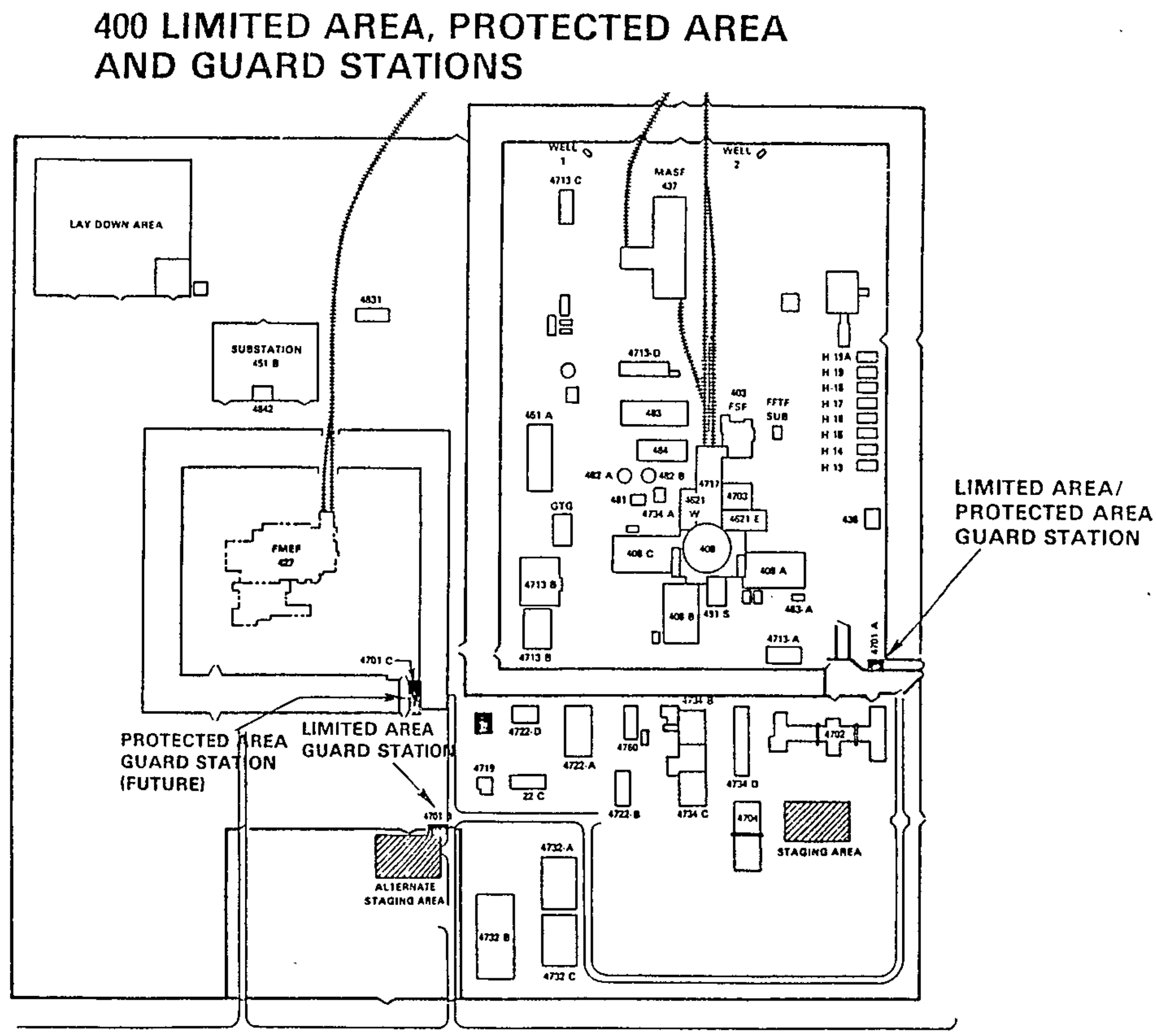


FIGURE F-8. 400 PROTECTED AREA

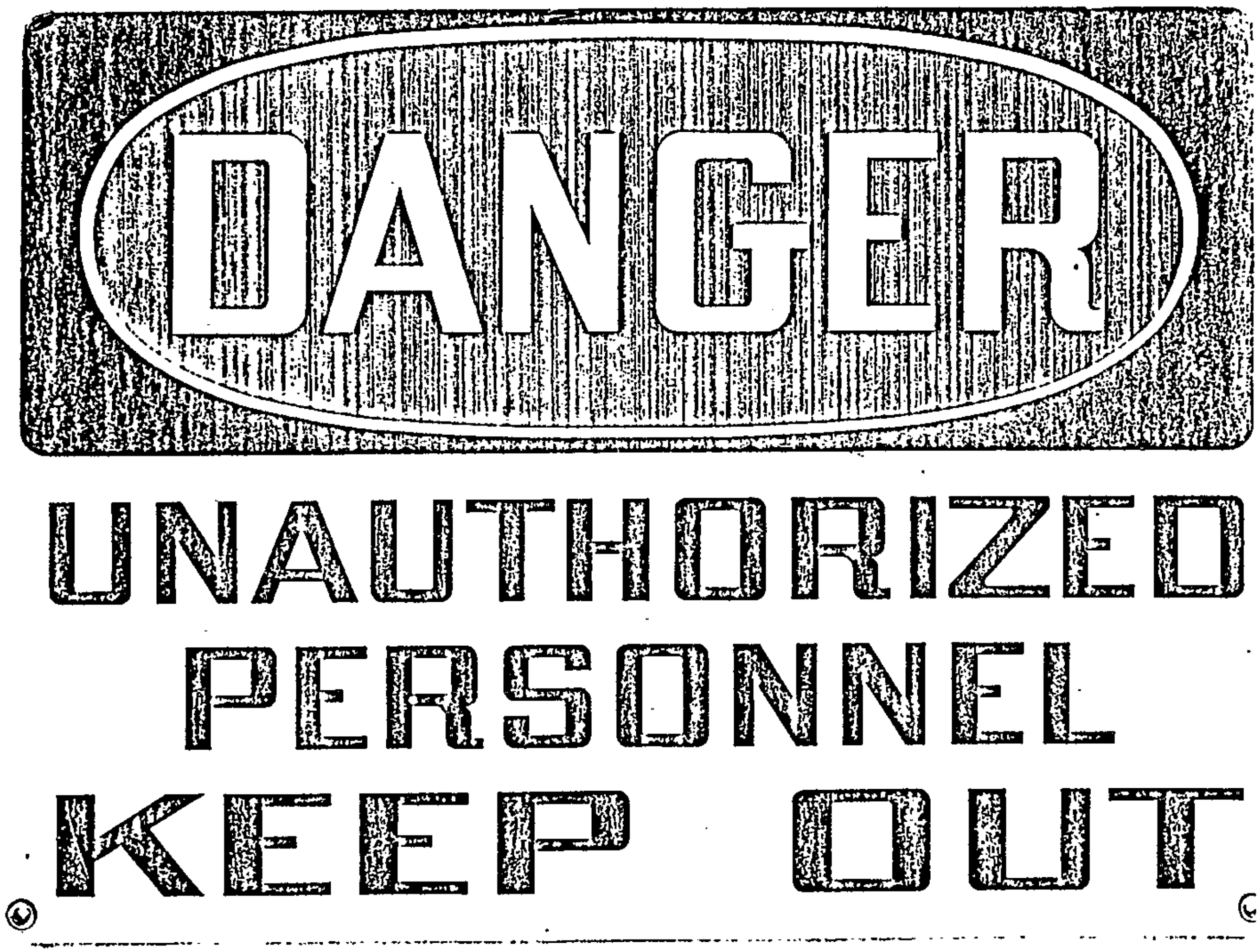


FIGURE F-9. WARNING SIGN

AMTF SAFETY INSPECTION LOG

| Date | Time | (Print) Name | Signature | Comments |
|---|---|---|---|---|
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**FIGURE F-10. INSPECTION FORM**

Performed by ______________

Date ______________

SODIUM TRANSFER/DISPOSAL RECORD

Sodium removed from ______________ (AMTF inventory #)

Total weight of original container before transfer ______________ lbs.

Total weight of original container after transfer ______________ lbs.

Net weight of sodium transferred ______________ lbs.

Original container retained ☐ yes ☐ no

If not retained, how was original container disposed of?

______________________________________________

______________________________________________

Sodium transferred to
☐ drum ______________ (AMTF inventory #)
☐ disposal container
☐ equipment ______________ (equipment name and description)
☐ other ______________ (explain)

Sodium disposed of by
☐ burning ☐ methanol
☐ dowanol ☐ water
☐ other ______________ (explain)

Scrap metal and materials disposed of ☐

Facility cleanup completed ☐

Comments ______________________________________________

**FIGURE F-11. ALKALI METAL TRANSFER/DISPOSAL FORM**

# SECTION G

## CONTINGENCY PLAN - ALKALI METAL FACILITIES

The information contained herein is submitted in accordance with the requirements for a contingency plan, as contained in 40 CFR 270.14(b)(f) and 264, Subpart D and WAC 173-303-350 and -360.

Westinghouse Hanford policy is to provide for the safety of WHC employees, other contractor personnel, visitors, and members of the general public in the event of an emergency such as a serious accident or a natural disaster. Westinghouse Hanford management has the responsibility to execute this policy and ensure that all employees understand their responsibilities and know the action to be taken in an emergency. In addition, management has certain key responsibilities to control and recover from an emergency.

Personnel safety is engineered into facilities, equipment processes, and procedures to the maximum extent practical. Each employee is responsible to perform his job in accordance with safety instructions and procedures and to remain alert to unsafe conditions or acts. However, a failure of these safeguards, either by an engineered safety control malfunction and/or by employee neglect to execute his safety responsibilities, may result in an emergency.

Westinghouse Hanford policy is to provide for personnel safety primarily by preventing an emergency. If an emergency does occur, WHC policy is to provide for the continual safety of personnel throughout the emergency.

Emergency plans and procedures must be established for all facilities assigned to Westinghouse Hanford Company according to Policy/Procedure 10-06 of WHC Management Guides. Appendix G-1 contains the Building Emergency Plans (BEP) for the Alkali Metal Facilities. The purpose of the plans is to provide employees with information necessary to react to emergency situations that may occur in order to:

- o Maximize employee safety, minimize the risk to life, and provide prompt and efficient treatment for injured persons

- o Ensure continuity of leadership at all times and in all emergency situations
- o Minimize the effects of an accident on the health and safety of the general public
- o Minimize property damage
- o Assure prompt internal and external communications with responsible authority

The 221-T and 105-DR BEPs are maintained by RHO and UNC, respectively, and may contain slightly different terminology, i.e., Emergency Action Coordinator (EAC) is used rather than Building Emergency Director (BED).

## G-1 GENERAL INFORMATION

### 3718-F

The Alkali Metal Treatment Facility is a storage, treatment and decontamination facility for handling alkali metal wastes or equipment that is contaminated with alkali metals. The facility is located in the 3718-F Building in the 300 Area of the Hanford Site and operated by Westinghouse Hanford (See Figure G-1). The facility can also be used to store alkali metal wastes.

### 221-T

The Containment Systems Test Facility is a research laboratory operated by WHC which is located in the 221-T Building, which is in the 200 West Area of the Hanford Site. The facility is used to perform experiments with alkali metal compounds. The compounds are reacted to form aerosols and the physical and chemical properties of the aerosols are measured.

The wastes generated at the laboratory consist of alkali metal hydroxides, oxides and carbonates that are products of both the experiments and the off-gas system. Alkali metal scrap is also generated at the facility. Figure G-2 shows the facility site plan.

### 105-DR

The Large Sodium Fire Facility is a research laboratory operated by WHC which is located in the 105-DR Building, which is in the 100D Area of the Hanford

Site. The facility is primarily used to conduct experiments for studying the behavior of molten alkali metals and alkali metal fires. Figure G-3 shows the facility site plan.

MASF

The Maintenance and Storage Facility cleaning tanks, operated by WHC, are not presently in operation, but will be started up in late 1986. MASF contains two treatment tanks, the large diameter cleaning vessel (LDCV) and the small diameter cleaning vessel (SDCV). The tanks are used for removing residual sodium from radioactive and nonradioactive waste material prior to disposal. It may also be used for reacting limited quantities of sodium. Figure G-4 shows the facility site plan.

324 SRPP

The 324 Building Sodium Removal Pilot Plant is a small decontamination station that has been used for developing methods for decontaminating equipment that has been contaminated with radioactive sodium, and for treating of small quantities of alkali metals. The equipment is located in a room in the 324 Building within the 300 Area of the Hanford Site. Figure G-5 shows the facility site plan.

The contingency plans are designed to minimize hazards to human health and the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. The provisions of the plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

These plans can be revised only with the approval of the group in charge of Industrial Safety based on information determined by that organization or on information made known to the organization by the manager of the facility. Generally, the types of changes that warrant a revision are:

- Revision of the facility permit
- An error(s) is found in the plan
- In an emergency situation, the plan is found to be inadequate or incomplete

- o The facility manager or the Emergency Director change
- o The emergency equipment list changes
- o The facility changes in such a manner that the plan is no longer correct or viable

Copies of these plans are located at the facilities. Additional copies are located with the WHC Safety Organization.

## G-2 EMERGENCY COORDINATORS

The Building Emergency Director is the individual who is assigned responsibility to assure that an appropriate emergency program is maintained and who has the authority and responsibility for the welfare and safety of personnel during an emergency.

The Building Emergency Director (BED) has the responsibility to assure that a BEP consistent with MG-30 "Emergency Preparedness Guide" is developed, maintained and distributed to appropriate personnel and organizations. The BED assures that the BEP Orientation and semi-annual training are provided and documented for all assigned facility occupants. The BED annually conducts and critiques building drills to test for compliance with emergency procedures and to identify and correct potentially weak areas. The BED assures that members of the Building Emergency Organization (BEO) are trained for emergency responses.

During an emergency, the Building Emergency Director has the authority and responsibility for the welfare and safety of personnel. The Building Emergency Director controls the emergency at the site of occurrence and provides on-the-scene implementation of the emergency plans developed by the WHC Emergency Director. The alternate Building Emergency Director shall assume the responsibilities of the Building Emergency Director in his absence.

Policy/Procedure 10-06 gives the Building Emergency Director the authority to commit necessary resources, including equipment and personnel, to the emergency plan.

The following list contains the names, addresses, office and home phone numbers of the primary and alternate Building Emergency Directors for each Alkali Metal Treatment Facility:

<u>3718-F</u>

<u>Building Emergency Director</u>: R. G. Ibatuan

Work: 340 Office Trailer
Richland, WA
376-3012

Home: 2120 Duportail
Richland, WA
943-1828

<u>Alternate Building Emergency Director</u>: D. E. Roohr

Work: 340 Office Trailer
Richland, WA
376-3221

Home: 512 Newcomer
Richland, WA
943-0289

<u>221-T</u>

<u>Building Emergency Director</u>: L. D. Muhlestein

Work: 221-T Building, 200 West Area
373-2312

Home: 1912 Dogwood Dr.
Richland, WA
946-0535

<u>Alternate Building Emergency Director</u>: J. W. Biglin

Work: 221-T Building, Room 23
373-2464

Home: 3512 W. Park
Pasco, WA
547-9942

<u>105-DR</u>

<u>Building Emergency Director</u>: W. V. Cook

Work: 221-T Building, 200 West Area
373-1420

Home: 5848 Gray
West Richland, WA
967-3635

<u>Alternate Building Emergency Director</u>: J. W. Biglin

Work: 221-T Building, Room 23
373-2464

Home: 3512 W. Park
Pasco, WA
547-9942

<u>MASF</u>

<u>Building Emergency Director</u>: R. J. Baumhardt

Work: 4710 Building, 400 Area
376-0604

Home: 346 Westmoreland Dr.
Richland, WA
375-3438

Alternate Building Emergency Director: D. J. Swain

Work: 4710 Building, 400 Area
376-0702

Home: 2409 S. Fillmore Pl.
Kennewick, WA
783-6898

324 SRPP

Building Emergency Director: W. F. Brehm

Work: 324 Building, 300 Area
376-3610

Home: 727 Snyder Rd.
Richland, WA
375-1045

Alternate Building Emergency Director: M. E. McMahan

Work: 324 Building, 300 Area
376-3144

Home: 1005 W 27th Ave
Kennewick, WA
586-4054

## G-3 IMPLEMENTATION

The BEDs are thoroughly familiar with all aspects of their facility contingency plans, all operations and activities at their facility, the types of waste being handled, the location of all records in their facility, and the layout of their facility. If the facility Building Emergency Director determines that the facility has had a release, fire, explosion, bomb threat, attack by hostile factions, or loss of services which could threaten human health or the environment, then the Building Emergency Plan is implemented. Figure G-6 shows an emergency action flow chart of the implementation process.

The decision by the BED to implement the contingency plan depends on whether an actual incident such as a fire, explosion, chemical spill, or release of hazardous waste constituents threatens human health or the environment. Many ways of discovering a spill or release of chemicals are available, including routine scheduled inspections by operating personnel. The following are situations that would warrant implementation of the contingency plan:

A fire and/or explosion occurs, such that

- The potential for human injury exists
- Toxic fumes are released
- The fire could spread on-site or off-site and possibly ignite other flammable materials or cause heat-induced explosions

- o The use of water and/or chemical fire suppressants would result in contaminated run-off
- o An imminent danger exists that an explosion could ignite other hazardous waste at the facility and possibly result in the release of toxic material

A spill or release of a hazardous material occurs, such that

- o The spill could result in the release of flammable liquids or vapors, thus causing a fire or gas explosion hazard
- o The spill could cause the release of toxic liquids or fumes
- o The spill can be contained on-site, but the potential exists for groundwater contamination
- o The spill cannot be contained on-site, resulting in off-site soil contamination and/or ground or surface water pollution

## G-4 EMERGENCY RESPONSE PROCEDURES

### G-4a Notification

If there is an imminent or actual emergency situation at one of the Alkali Metal Facilities, the Building Emergency Director immediately activates internal facility alarms.

If the emergency affects only one building or facility, the action to control and recover from the emergency is the responsibility of that Building Emergency Organization (BEO) only. For immediate assistance in emergencies involving fire, first aid, or security, the WHC Hanford Emergency Number 811 is called. For all other WHC plant emergencies and additional assistance the WHC Hanford Emergency Number 6-5000 is called.

Assistance by the Emergency Support Organization to the BED is available by dialing 6-5000. If the emergency affects more than one building or facility, the WHC Emergency Organization is activated to coordinate and help control the emergency. The WHC Emergency Organization will be activated if an emergency affects areas exterior to WHC boundaries as well as if facilities are threatened by an emergency exterior to WHC boundaries. In all cases, the BED has full responsibility and authority for bringing the emergency under control within the building. The WHC Emergency Organization and ESO are described in the following paragraphs.

The WHC Emergency Organization is charted in Figure G-7. The Emergency Support Organization (ESO) is outlined in Figure G-8. In general, the WHC Emergency Organization consists of the WHC Emergency Director (the Manager, Safety, Safeguards, and Administrative Services) the Responsible Level Two Manager, an administrative staff (Emergency Control Center Staff - See Figure G-9), and a staff that provides technical assistance and gives advice for coping with the emergency (ESO). Any part or all of the ESO may also provide assistance to the Building Emergency Director, if requested. Assistance from the ESO may be needed for determining the extent of an emergency or to aid in handling any localized building emergency. The Building Emergency Director contacts 6-5000 to obtain assistance.

The WHC Emergency Support Organization is immediately mobilized when alerted via the 6-5000 crash alarm phone system. It is the responsibility of this organization to confirm either (1) that, indeed, an emergency does exist which may require activation of the rest of the WHC Emergency Organization or (2) that it is a false alarm and the entire WHC Emergency Organization should not be activated.

G-4b Identification of Dangerous Materials

The BED will identify the character, exact source, amount, and areal extent of the release. Identification of the spilled waste can be made by visual inspection, by sampling, and by reference to facility inventory records and shipping manifests. An inventory of chemicals used in WHC facilities is kept at the 300 Area Emergency Control Center. The list is indexed by building and room and may be used to identify hazardous chemicals that may be involved in an incident.

Samples of spilled non-radioactive material can be analyzed by the WHC Analytical Laboratories, or sent to the Hanford Environmental Health Foundation or U.S. Testing, who are contracted by DOE-RL. Radiological spills can be analyzed by U.S. Testing to provide identification of spilled materials.

G-4c Assessment

The Emergency Support Organization (ESO) may provide assistance to the Building Emergency Director, if requested. Assistance from the ESO may be needed for determining the extent of an emergency or to aid in handling a localized facility emergency. The Building Emergency Director contacts 6-5000 to obtain assistance.

The ESO assesses possible direct, indirect, immediate and long term effects that may result from the emergency. The ESO has the authority for interfacing with DOE-RL and Hanford contractors during the emergency. DOE-RL is the on-scene coordinator for the Hanford Site.

Worst-case assumptions are used by decision makers until specific information can replace the assumptions. The first assumptions may result in the BED initiating an evacuation.

G-4d Control Procedures

The "Emergency Preparedness Guide," MG-30, facility BEPs (Appendix G-1), and Facility Emergency Operating Procedures specify the procedures to be followed to handle emergencies such as fires, explosions, or releases. The facilities are easily accessible to firefighting and other emergency equipment. The initial response to any emergency will be to protect human health and safety and then the environment. Identification, containment, treatment, and disposal assessment will be secondary responses.

G-4d(1) Spill or Material Release

In the event of a major emergency involving a chemical or hazardous waste spill, the following general procedures will be followed for safe and rapid response and control of the situation:

1. The discoverer of a spill will immediately call the Building Emergency Director and provide as much information as possible without personal risk.

2. The BED will proceed directly to the scene.

3. The BED will obtain all necessary information pertaining to the incident.

4. If evacuation is necessary, the BED will sound the evacuation alarm and give instructions over the PA system.

5. If the BED determines that the emergency may affect more than one building or facility, the ESO is notified.

6. If there is a threat to human health, the alarm will be sounded and the WHC Emergency Organization will be notified.

7. Notification of the WHC Emergency Organization sets into motion the notification process for the DOE-RL, other Hanford contractors, and outside agencies.

8. The Hanford Patrol will set up roadblocks within the plant to route traffic away from the emergency scene.

9. The emergency medical technicians will remove injured personnel to a safe location, apply first aid, and prepare for transport to the Medical Department or Kadlec Hospital. Doctors and nurses will be on standby at the medical facility during the day shift.

10. The facility operators/technicians will contain the spill. The operator/ technicians will ensure that spilled material is properly collected and disposed of. These personnel will be equipped with proper protective equipment and clothing.

11. The BED will ensure that any flammable liquid spills do not ignite. In the event a fire results, the 300 Area Fire Department will control the fire using water, foam and powders, as necessary.

12. All emergency equipment will be cleaned and fit for its intended use immediately after cleanup procedures are complete.

13. If the spill results in the formation of a toxic vapor that is released to the atmosphere, the plant-wide evacuation alarm will be sounded.

G-4d(2) Fire or Explosion

The following actions will be taken in the event of a fire or explosion.

1. Should the fire alarms (two gongs per second) become activated, personnel will shut down equipment, including transfer pumps and agitators, if time permits.

2. The alarms provide a coded signal to the Fire Station and to Patrol Headquarters.

3. Personnel shall leave the area by the nearest exit and proceed to the staging area designated for each facility.

4. The BED shall be immediately notified.

5. The BED will proceed directly to the scene.

6. The BED will obtain all necessary information pertaining to the incident.

7. The BED will contact the ESO (6-5000) and advise regarding the extent of the emergency (including estimates of hazardous material quantities and concentrations released to sewers and/or to the atmosphere) and of action necessary to protect nearby facilities.

8. Notification of the WHC Emergency Organization sets into motion the notification process for the DOE, other Hanford contractors, and outside agencies.

9. The Hanford Patrol will set up roadblocks within the plant to route traffic away from the emergency scene.

10. The emergency medical technicians will remove injured personnel to a safe location, apply first aid, and prepare for transport to the medical department or Kadlec Hospital. Doctors and nurses will be on standby at the medical facility during the day shift.

11. The 300 Area Fire Department will contain the fire in the 300 and 400 Areas; the 100 Area Fire Department will contain fires at 105-DR and the 200 Area Fire Department will contain fires at 221-T.

12. All emergency equipment will be cleaned and fit for its intended use immediately after cleanup procedures are complete.

G-4e Prevention of Recurrence or Spread of Fires, Explosions, or Releases

The BED is responsible for taking all necessary steps to ensure that a secondary release, fire, or explosion does not recur after the initial spill/incident. Procedures that will be implemented may include:

- Inspection of containment for leaks or cracks
- Inspection for gas generation
- Isolation of residual waste materials
- Reactivation of adjacent operations only after all cleanup of residual waste materials is achieved

G-4f Storage and Treatment of Released Material

For emergencies not involving activation of the WHC Emergency Organization, the BED is responsible for ensuring that conditions are restored to normal before operations are resumed.

If the WHC Emergency Organization was activated and the emergency phase completed (ECC deactivated), a special recovery organization will be appointed to restore conditions to normal. The make-up of the organization will be dependent on the extent of the damage and who it affected. This recovery organization will be appointed by top WHC management.

It is during the recovery phase that cleanup procedures will begin. Procedures for treatment, storage, or disposal of recovered waste or any other material resulting from a release, fire or explosion at the facility, are implemented at this time.

Immediately after an emergency, the BED or the special recovery organization will make arrangements for treatment, storage, or disposal of recovered waste, contaminated soil, surface waste, or any other contaminated material. The BED or the special recovery organization will deploy and utilize any emergency equipment that is deemed necessary to carry out these tasks.

Hazardous wastes will be contained in drums or other appropriately sized containers and transported to the 200 Area Waste Storage Area.

Cleanup actions may include the following:

- Small spills will be treated with absorbent material and the residue packed in drums for disposal
- Leaking drums will be placed in overpack drums
- All chemically contaminated soils and cleanup debris will be thoroughly cleaned up and contained for disposal
- At all times, efforts will be made to segregate incompatible wastes during cleanup operations
- The BED or the special recovery organization has the responsibility to make cleanup arrangements. They will ensure that all response equipment is decontaminated and readied for service or, if not fit for further use, is disposed of properly.

G-4g Incompatible Waste

After an emergency, the special recovery organization appointed to restore facility conditions to normal will ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed.

For emergencies not involving activation of the WHC Emergency Organization, the actions indicated above are the responsibility of the BED of the facility.

Every effort will be made to segregate incompatible wastes during cleanup operations. The BED or the special recovery organization will ensure that within the area affected by the spill/fire, no additional waste that may be incompatible with the released material is treated, stored, or disposed of until all cleanup procedures are completed.

G-4h Post-Emergency Equipment Maintenance

After an emergency, the special recovery organization appointed to restore conditions to normal will address procedures for ensuring that all emergency equipment at the facility is cleaned and fit for its intended use before operations are resumed. The following equipment will be cleaned and refit for use:

- Protective clothing and respirators will be sent to RHO laundry for cleaning
- Fire extinguishers will be recharged for use (loaners will be provided by the 300 Area Fire Department in the interim)
- Alarms and detectors will be reactivated by the Fire Department

For emergencies not involving activation of the WHC Emergency Organization, the Building Emergency Director is responsible for ensuring that emergency equipment is cleaned and fit for its intended use before operations are resumed.

WHC will notify the DOE, who in turn will notify the regional administrator and necessary local and state authorities that cleanup procedures have been completed and all emergency equipment is cleaned and fit for use.

G-4i Container Spills and Leakage

The weekly safety inspections of the Alkali Metal Storage areas at 3718-F and 105-DR includes inspection of the containers for integrity (Section F). Any problems are noted on the inspection log and in the Operating Log and reported to the facility supervisor. Response to a spill or leak is immediate:

- o The discoverer of a spill will initiate cleanup procedures; spilled or leaked material is cleaned up immediately
- o Materials collected during cleanup are properly collected and disposed of
- o Cleanup equipment is cleaned and refit for its intended use immediately after cleanup procedures are complete
- o Should the spill or leak pose a threat to human health or the environment, the BED will be notified immediately
- o The BED will assess whether the WHC Emergency Organization should be notified

G-4j Tank Spills and Leakage

The 3718-F Facility contains three tanks used for reaction of alkali metals. These tanks are inspected prior to and during use to detect evidence of spills and leakage.

In the event of a leak and/or spill:

- o Spilled and/or leaked material is cleaned up
- o If a tank develops a leak, the contents are transferred with a drum pump to 55-gallon drums that are compatible with the tank contents
- o Materials collected during cleanup are properly collected and disposed of
- o Cleanup equipment is cleaned and refit for its intended use after cleanup procedures are complete
- o Should the spill or leak pose a threat to human health or the environment, the BED is notified
- o The BED will assess whether the WHC Emergency Organization should be notified

The SDCV and the LDCV at the MASF facility and the 324 Building Sodium Removal Pilot Plant (SRPP) are not operational at this time. Before commencement of operations, procedures and preventions for response to a spill or leak will be prepared. They will be similar to the procedures for 3718-F.

G-4k Waste Pile Spills and Leakage
Not applicable.

G-4l Surface Impoundment Spills and Leakage
Not applicable.

G-4m Incineration Spills and Leakage
Not applicable.

G-4n Landfill Leakage
Not applicable.

G-4o Land Treatment Facility Spills and Leakage
Not applicable.

G-5 EMERGENCY EQUIPMENT
Table G-1 contains the Emergency equipment located at the 3718-F, 105-DR, 221-T, MASF, and 324 SRPP facilities.

G-6 COORDINATION AGREEMENT
The presence of more than one DOE contractor on the Hanford Site allows for the sharing of emergency equipment and personnel. All contractors have sufficient familiarity with the operations of each other to be of assistance with a minimum of direction.

The Department of Energy has Memorandums of Understanding (MOU) in place with the local police and fire departments, hospitals, and contractors for coordination agreements for actions in the case of emergency. These MOUs establish a framework of cooperation between these groups in the planning for and response to emergencies at the Hanford Site which might have offsite consequences.

Coordinated Emergency services agreements (MOUs) have been established in writing between the Department of Energy, Richland Operations office, and the:

- o State of Washington
- o Benton and Franklin Counties
- o Washington Public Power Supply System
- o Washington Public Power Supply System and Hanford Environmental Health Foundation
- o Federal Aviation Administration Department of Transportation
- o National Weather Service
- o Our Lady of Lourdes Hospital
- o Kadlec Hospital
- o Kennewick General Hospital
- o Coast Guard and Washington Public Power Supply System
- o States of Washington and Oregon and Washington Public Power Supply System (Radiological Assistance Response)

Appendix G-2 contains copies of the written agreements as well as emergency action levels and response actions for activating and coordinating the indicated services.

## G-7 EVACUATION PLAN

See Appendix G-1 for information on emergency signals at the facilities.

Evacuation plan information for the Alkali Metal Treatment Facility follows:

| BUILDING | ROUTE | STAGING AREA |
|---|---|---|
| 3718-F | Exit through nearest gate | 3765 Building Parking Lot |
| 105-DR | Exit through nearest door | 1703-D Parking Lot |
| 221-T | Exit through nearest door | Outside NE Building Entrance or Parking Area South of 221-T |
| MASF | Exit through nearest door | 4702 Parking Lot or FCP Parking Lot |
| 324 | Exit through nearest door | See Appendix G-1 |

G-8 REQUIRED REPORTS

The submission and retention of reports for an emergency incident is detailed in the WHC Management Guides, Policies and Procedures, Section 10-01.

The WHC policy states that unusual occurrences shall be promptly investigated, reported and analyzed to assure that effective corrective action is taken in compliance with contractual, statutory and corporate requirements. Three levels of reporting are required, depending on the extent of the emergency; Critiques, Event Fact Sheets and Unusual Occurrence Reports.

An event is a significant deviation from normal operation that may or may not be reportable as an unusual occurrence or critique, which requires WHC management evaluation for determining the depth of investigation and level of reporting.

A critique is an evaluation of those events that WHC management has determined require investigation beyond that identified in the Event Fact Sheet.

An unusual occurrence is an event outside normal operations that causes or risks serious injury to personnel or has significant effect upon the safety, reliability or cost of reactors, programmatic facilities or associated equipment, or upon the programs conducted therein. Unusual occurrences may arise during development, fabrication or construction, as well as during operation and maintenance.

The facility manager is responsible for investigating each event in his/her area(s) of responsibility and submitting the appropriate report. Appendix G-3 contains the current format, as of September 1, 1985, used for filing critiques, Event Fact Sheets or Unusual Occurrence Reports. These formats are subject to change and may be revised as required.

**REFERENCES**

WHC Management Guides, Policies and Procedures, Section 10-06, April 13, 1984 Revision.

WHC Management Guides, Policies and Procedures, Section 10-01, September 30, 1983 Revision.

# TABLE G-1

## EMERGENCY EQUIPMENT

| BLDG | EQUIPMENT | LOCATION | TYPE |
|---|---|---|---|
| 3718-F | Smoke detectors | Throughout building | --- |
| | Fire extinguishers and agents | Throughout building | NaX, $Na_2CO_3$, $CO_2$ |
| | Sprinkler system | None | --- |
| | Safety shower/eye wash | Outside building | --- |
| 105-DR | Smoke detectors | Throughout building | --- |
| | Fire extinguishers | Throughout building | NaX |
| | Sprinkler system | None | --- |
| 221-T | Fire extinguishers | Throughout building | See Appendix G-1, 221-T |
| | Smoke detectors | None | --- |
| | Sprinkler system | None | --- |
| MASF | | | |
| 324 | Smoke detectors | Throughout building | --- |
| | Fire extinguishers | Throughout building | NaX, dry chemical |

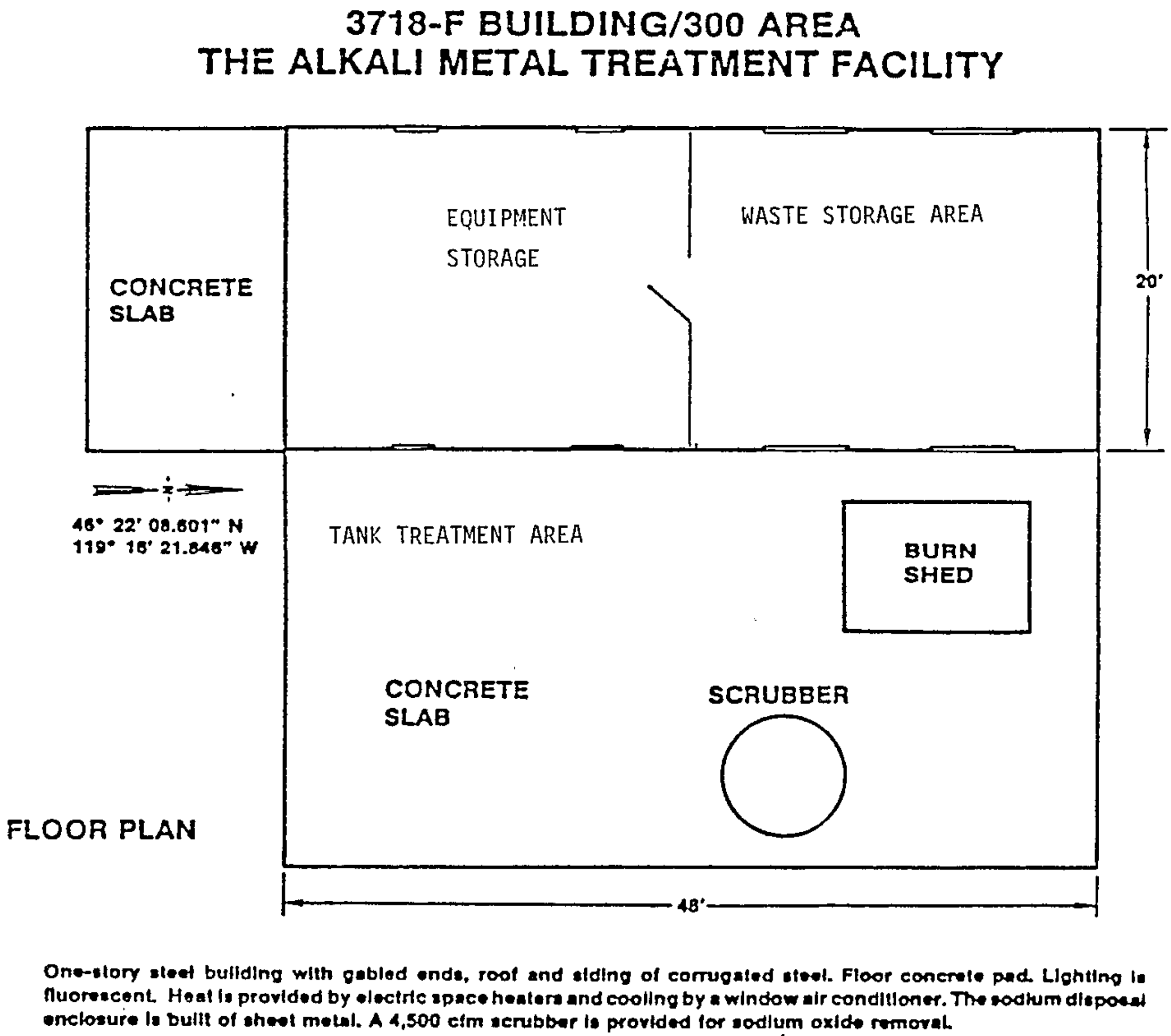



FIGURE G-1. 3718-F ALKALI METAL TREATMENT FACILITY

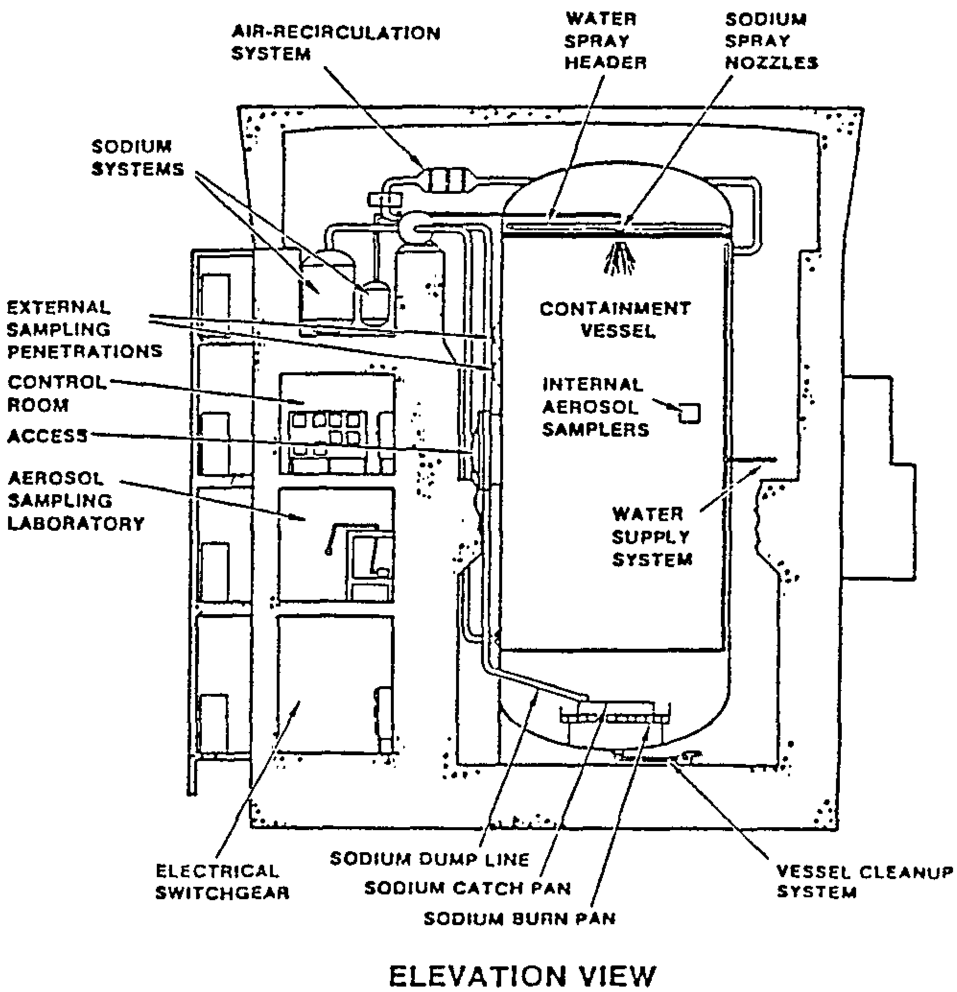
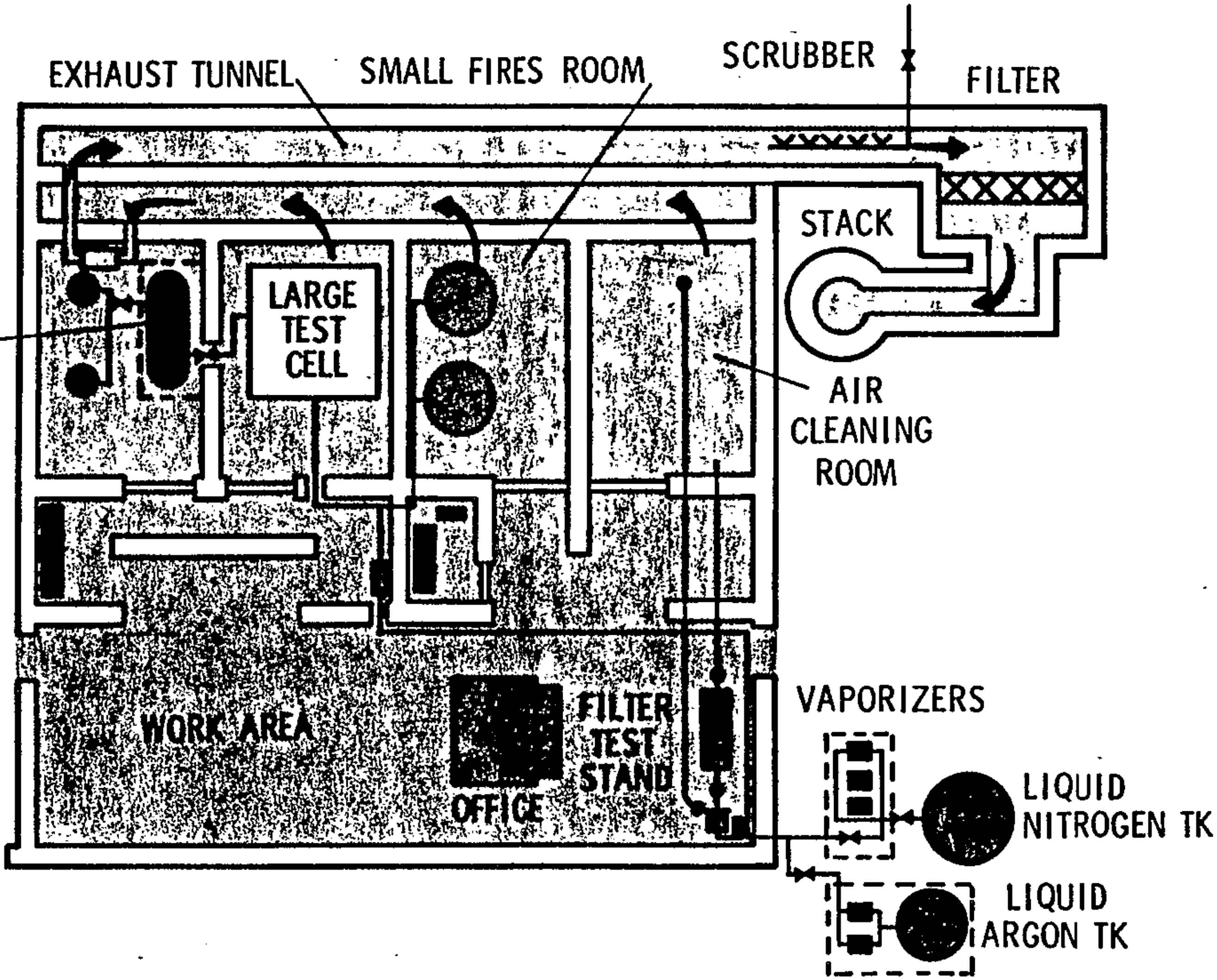



FIGURE G-2. 221-T CONTAINMENT SYSTEMS TEST FACILITY

# LARGE SODIUM FIRE FACILITY




HEDL 7904-026.1

FIGURE G-3. 105-DR LARGE SODIUM FIRE FACILITY LAYOUT

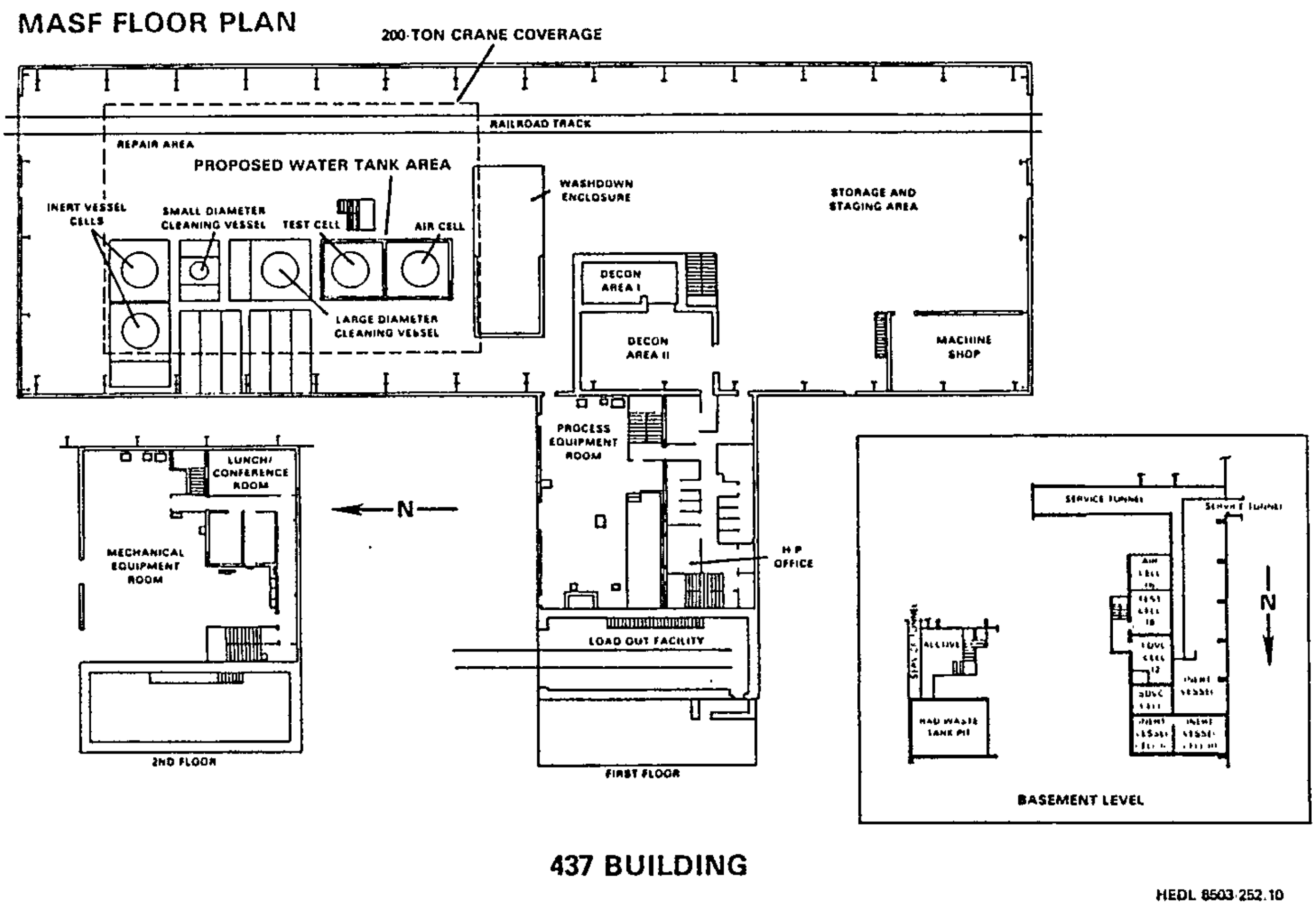



FIGURE G-4. 437 MAINTENANCE AND STORAGE FACILITY LAYOUT

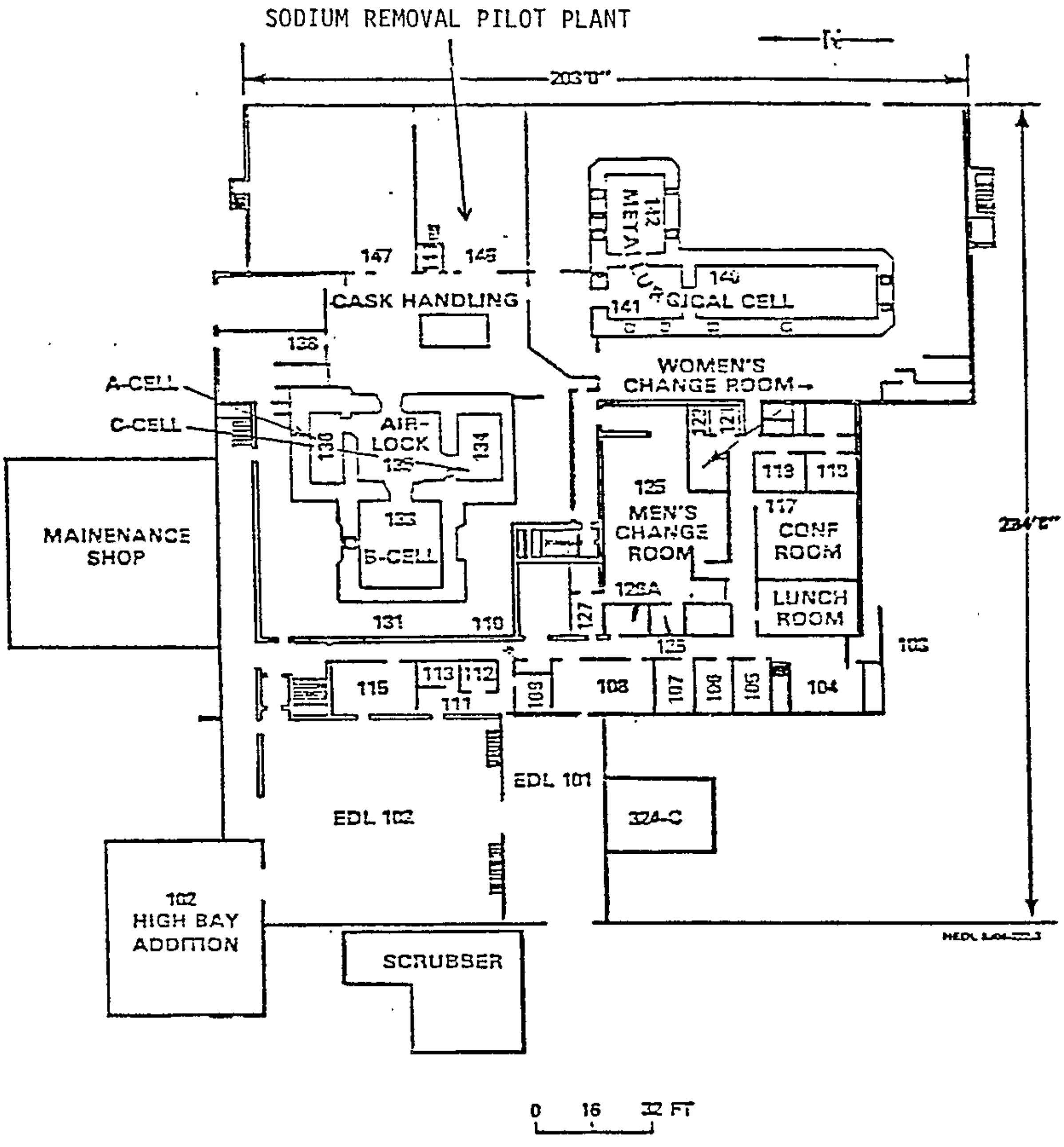



FIGURE G-5. 324 SODIUM REMOVAL PILOT PLANT LAYOUT

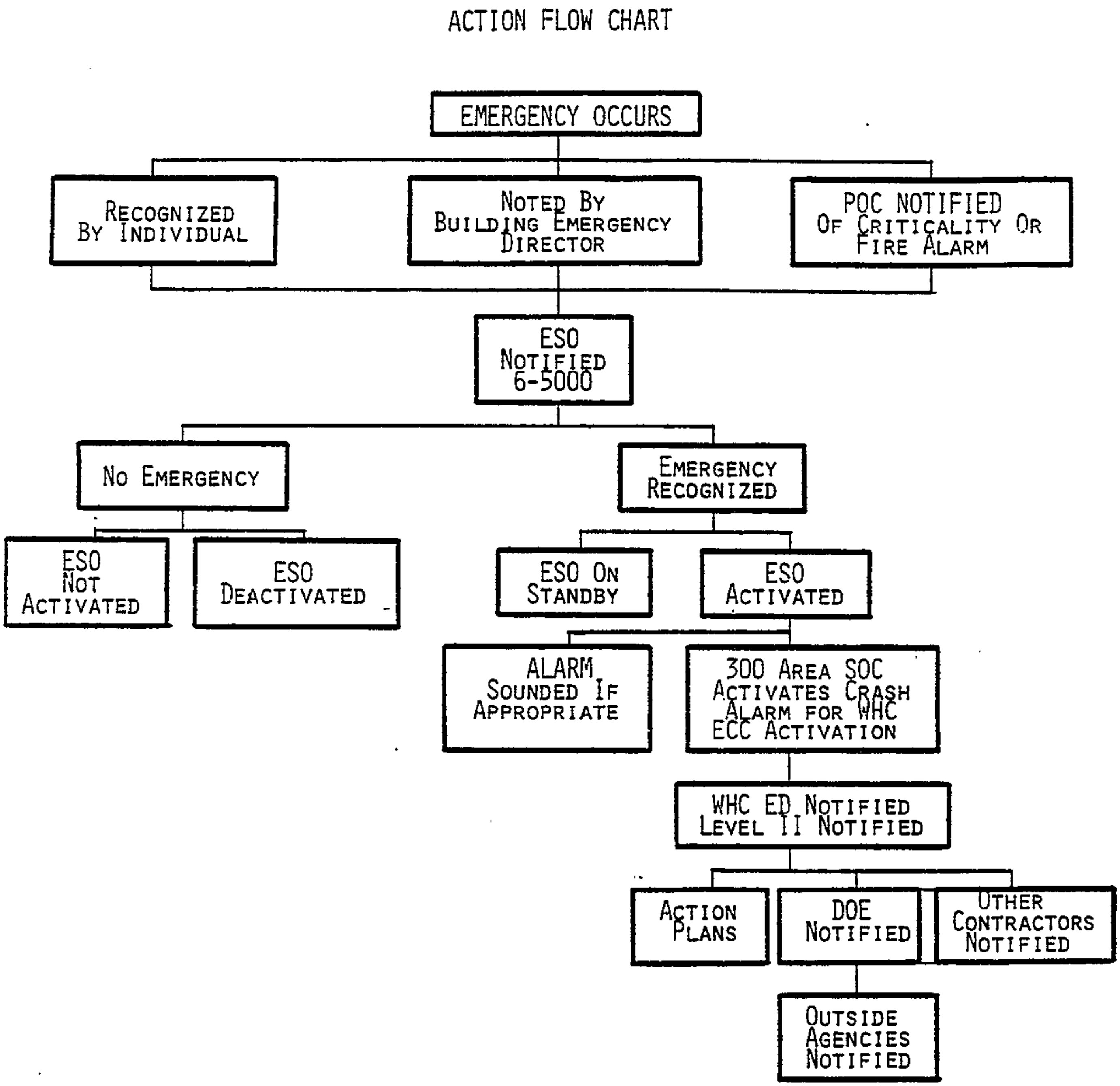



FIGURE G-6. EMERGENCY ACTION FLOW CHART

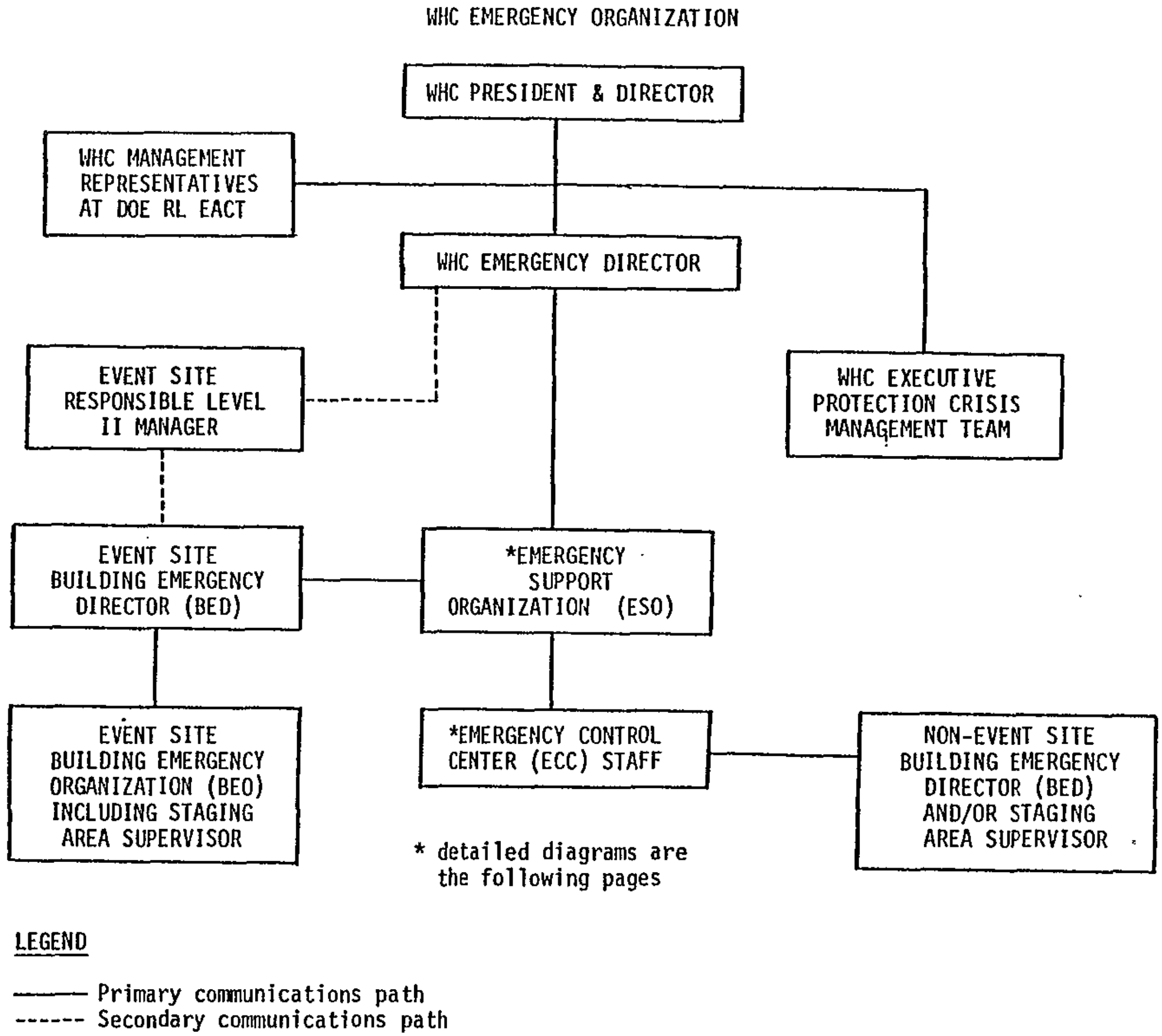



FIGURE G-7. WHC EMERGENCY ORGANIZATION

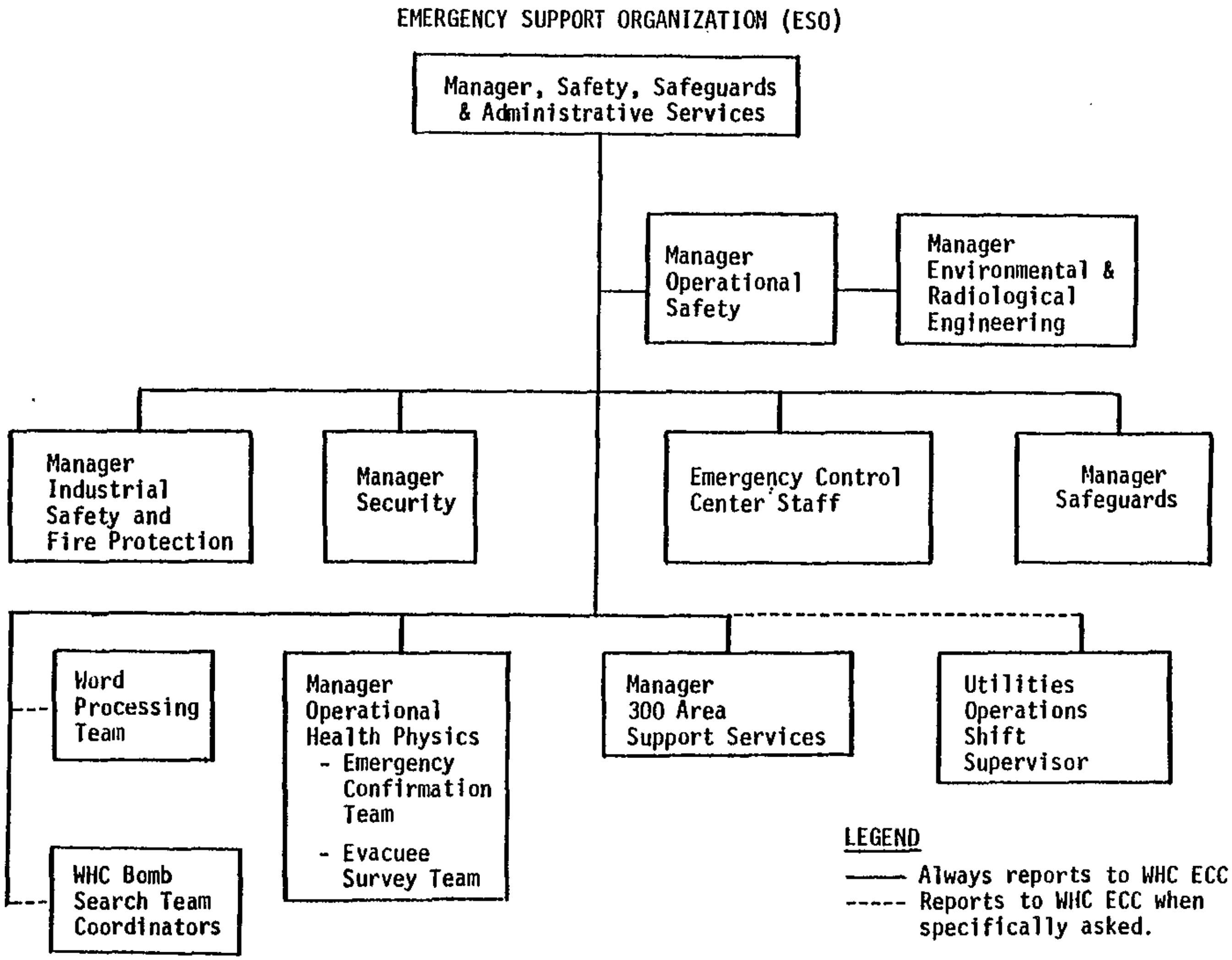



FIGURE G-8. EMERGENCY SUPPORT ORGANIZATION (ESO)

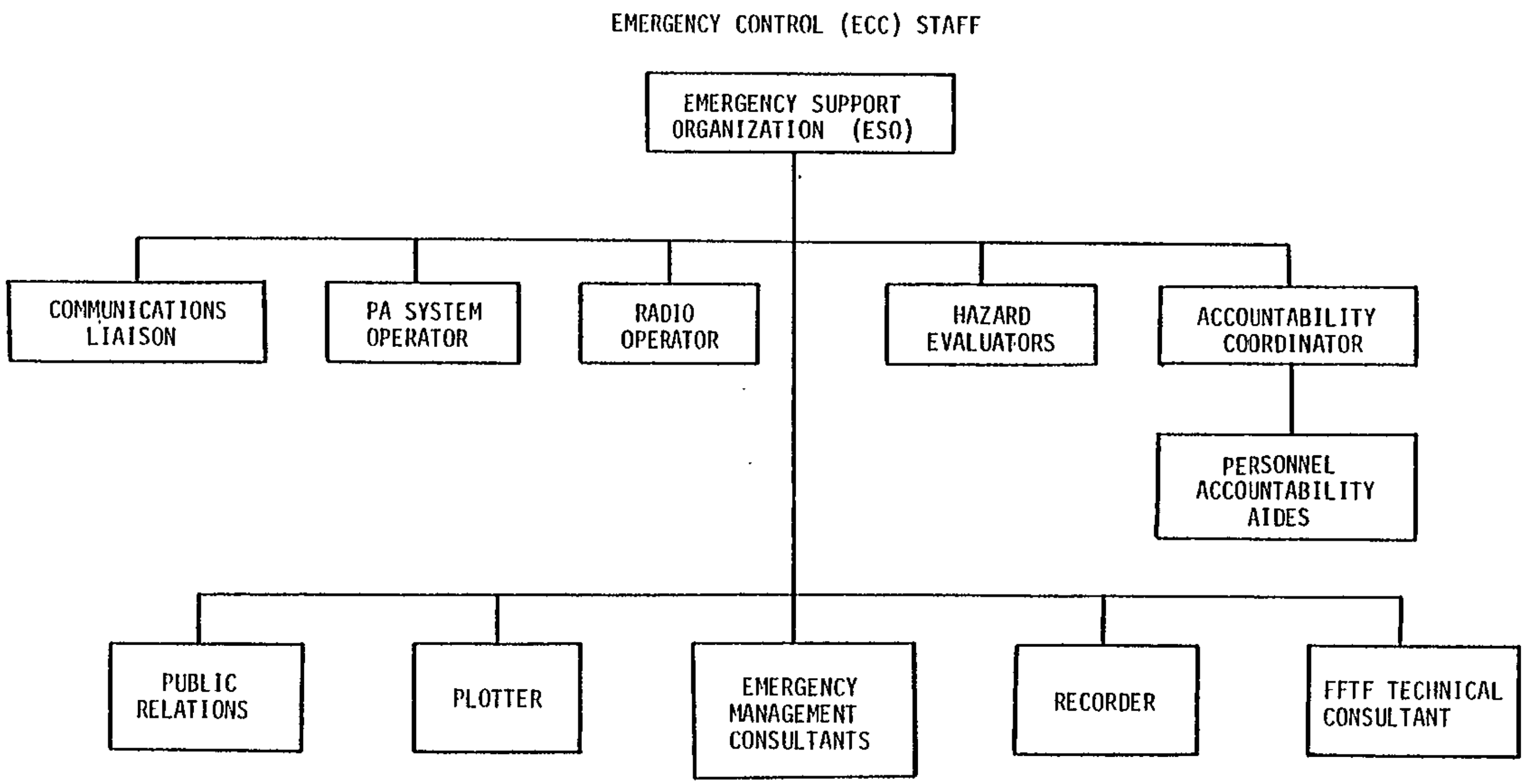



**FIGURE G-9. EMERGENCY CONTROL CENTER (ECC) STAFF**

# APPENDIX G-1
# BUILDING EMERGENCY PLANS

## NOTICE

These Manuals, Plans or Procedures are provided as examples and are subject to change. Current copies can be obtained by contacting the Manager of Waste Systems Engineering for the Westinghouse Hanford Company.

ALKALI METAL TREATMENT FACILITY (3718F)

| Hanford Engineering Development Laboratory | Westinghouse Hanford Company<br>A subsidiary of Westinghouse Electric Corporation<br>P. O. Box 1970 Richland, Wa. 99352 | PAGE 1 OF 9 |
|---|---|---|

| PROCEDURE NUMBER | FACILITY | DATE |
|---|---|---|
| AMTF-BEP | Alkali Metal Treatment Facility 3718-F | 2/25/85 |
| TITLE | | REVISION NO. |
| 3718-F Building Emergency Procedure | | #2 |
| PREPARED BY D. E. Roohr D.E. Roohr | REVIEWED BY R. G. Ibatuan R G Ibatuan | APPROVED BY R. N. Thompson R N Thompson<br>R.O Zimmerman |

1.0 BUILDING EMERGENCY PLAN 2/85

1.1 Purpose

To provide detailed instruction to occupants of the 3718-F Building in the event of an emergency.

2.0 EMERGENCY SIGNALS

2.1 Howler

2.1.1 Nuclear Criticality

GO! NOW! Run away from the Building. Proceed to 3765 Building parking lot. Additional information will be relayed over area loud speakers or by the WHC Emergency Director.

NOTE: There are no criticality alarms in 3718-F. There is no need to evacuate due to a nearby building's criticality unless otherwise informed. If a criticality alarm occurs while visiting another facility, evacuate to that facility's normal staging area.

2.2 Gong

2.2.1 Fire

a) Shut down affected equipment.

b) Pull nearest fire alarm box if automatic detectors have not activated.

c) Leave the facility by the Northeast vehicle gate.

d) All personnel shall report to the Building Emergency Director (BED) or alternate BED for accountability.

2.3 Steady Siren

2.3.3 Evacuation

When this emergency signal is received, perform the following as quickly as possible:

a) Shut down all equipment.

2.3.3 Evacuation - continued

b) If special operations are in progress (critical lifts, sodium transfer, sodium disposal operation) take time to put systems in a safe condition.

c) Leave building by any exit and proceed to the 3765 Building staging area in the 3765 Building parking lot. All personnel should report to the Building Emergency Director.

d) Responsibility for personnel accountability is R. G. Ibatuan.

e) Additional information and directions will be relayed over the 300 Area public address system.

2.4 Wavering Siren

2.4.1 Take Cover

Personnel who are outside shall go inside the nearest building. Personnel who are inside shall stay inside. Emergency instructions will be issued. These instructions may be relayed by a variety of methods, including the HEDL "Hot-line" system, the 300 Area crash alarm, various public address systems, the evacuation siren, etc.

0. EMERGENCY ORGANIZATION

3.1 Description and Responsibilities

3.1.1 Building Emergency Director (BED)

The BED is responsible for all necessary action at the site of an emergency. This includes rescue action, control and care of personnel, attempts to stabilize conditions at the emergency site. When an incident requires the attention of emergency personnel, the WHC Emergency Support Organization can be reached at 6-5000.

3.1.2 Alternate BED

The alternate BED shall assume the responsibilities of the BED in his absence.

3.1.3 Staging Area Supervision

The BED and/or alternate BED are responsible for the following:

a) Personnel accountability
b) Personnel safety
c) Authority in releasing individuals
d) Aid in communications and evacuation of the emergency site.

3.1.4 Volunteer Bomb Search Team

R. G. Ibatuan
D. E. Roohr

3.1.4 Volunteer Bomb Search Team - continued

The volunteer bomb search team will assist the WHC bomb search team in the systematic search of 3718-F and grounds.

3.2 Assignments

Building Emergency Director: R. G. Ibatuan (6-3012)
Alternate: D. E. Roohr (6-3012) or (6-3221)

## 4.0 EVACUATION

### 4.1 Response

| Circumstance | Pre-Evacuation Action | Evacuation Route | Assembly Point |
|---|---|---|---|
| Fire | Shut down any affected equipment. | Leave building by normal exit and stand clear. | 3765 Parking Lot |
| Evacuation | Leave any operating equipment in safe condition. | Leave building by any exit. | 3765 Parking Lot. |
| Bomb Threat | Leave any operating equipment in safe condition. | Leave building by any exit. | 3765 Parking Lot. |

## 5.0 PERSONNEL ACCOUNTABILITY

The BED/Alternate shall collect the names of any missing personnel and inform the Emergency Support Organization at 6-5000.

The 3718-F is only occupied on a part-time basis, therefore any employes at 3718-F at the time of an area-wide evacuation will be accounted for by their management who knows their whereabouts. In addition, these employes should report to the 3765 Building Emergency Director as "extras" since they are normally assigned to the 340 Facility. The 3765 BED will then report them to the Personnel Accountability Aide, who will pass this on to the Emergency Control Center. If 340 or 3718-F is the event site these employes would then be accounted for.

## 6.0 SPECIAL SITUATIONS

### 6.1 Broken Water Pipe

a) Shut off main building water supply valve immediately. The valve is located on the Northeast corner of 3718-F Building.

### 6.2 Storm Damage

a) Take no action within the building in the absence of a sodium qualified individual.

b) If building is otherwise unattended, call Power Operators at 6-3526 and they will notify the BED/alternate.

6.3 Serious Accident Within the Facility

a) Determine if anyone has been injured. If first aid is necessary and can be safely administered, perform what aid you are qualified to give. Call 811 for assistance.

b) If rescue of personnel is necessary, take action only if it can be safely accomplished. This, of course, is a judgemental decision. Immediately after taking whatever action thought reasonable in regards to personnel safety, call 6-5000.

c) Notify BED/alternate.

d) The BED shall account for all personnel thought to be in the area and provide necessary assistance to ESO personnel.

e) The BED shall establish a debriefing team to interview personnel and collect date pertinent to the event and its consequences.

6.4 Bomb Threats

6.4.1 Receivers of Telephoned Threats

Should an employee receive a direct telphone threat, the probability of safely concluding the incident may increase if the response described below is performed.

a) Using the checklists for threating phone calls on pages 8 and 9:

1. As soon as possible, following the call, write down the exact words of the caller as best remembered. Pay particular attention to any references made to location and detonation time of a bomb.

2. If the caller does not indicate the bombs location or detonation time, ask him. Attempt to engage the caller in further conversation towards that end. Express doubt about the seriousness of the call, which might goad the caller into adding information and proof of his seriousness.

3. Note vocal characteristics of the caller: whether the voice was muffled or clear, male or female, adolescent or adult; whether the caller seemed educated or unpolished, calm, or hysterical; or whether there were unusual or perculiar pronunciations of words or syllables or an accent. Note also any background noise that might identify location of the caller.

4. Immediately notify the WHC ESO at 6-5000.

5. Notify the BED/alternate. Tell no one else.

6.4.2 Receivers of Written Threats

a) Preserve fingerprints by handling the letter as little as possible.

b) Record all details of the receipt; i.e., where and when found, how delivered, etc.

c) Immediately notify ESO at 6-5000.

d) Notify the BED/alternate. Tell no one else. Release the letter only to HEDL security personnel or a security designated individual.

6.4.3 Emergency Evacuation

An evacuation that is ordered by the WHC Emergency Director, his alternate, or ESO may be "immediate", or "systematic" as described below. Basically, "immediate" evacuation call for the same procedure to be followed as when a steady siren occurs, while a "systematic" evacuation requires a brief search by personnel of their work areas.

a) Initiate evacuation and/or search when directed by WHC Emergency Director or alternate.

1. Immediate Evacuation Procedure:

   a. Notify building occupants of evacuation.

2. Systematic Evacuation Procedure:

   a. Notify building occupants of the nature of the emergency and the proper evacuation procedure to follow.

   b. Initiate evcuation.

3. Search:

   a. Assemble the volunteer bomb search crew and standby for instructions which will come from the WHC bomb search team.

   b. If location of the bomb was indicated, begin search in that area. Otherwise, or if no bomb is found in the indicated are, the search pattern should be from outside in and bottom up.

6.4.5 Building Occupants

a) Immediate Evacuation Procedure (steady siren blast for 3 to 5 minutes).

1. Proceed to designated staging area via approprate exit routes.

6.4.5 Building Occupants - continued

2. Follow instructions of staging area supervisor for accountability purposes.

3. Follow instructions delivered by PA system.

4. Do not leave staging area until instructed to do so.

b) Systematic Evacuation

1. Follow instructions given by WHC Emergency Director or relayed by BED.

2. Terminate work in progress and shut down operating equipment that cannot be left unattended.

3. Unplug all electrical devices (from coffee pots to air conditioners) and leave doors open.

4. Briefly search your immediate work are for suspicious objects. Note the location and appearance of any suspicious object found, but NO NOT TOUCH OR DISTURB that object. Leave desk drawers open to signal that they have been searched.

5. Evacuate the building, taking along your personnel belongings, and report to your designated evacuation staging area.

6. Report any suspicious objects to the staging area supervisor. Follow instructions given by the staging area supervisor and/or PA system.

7. Do not leave the staging area until so instructed.

## 7.0 TRAINING/REVIEW POLICY

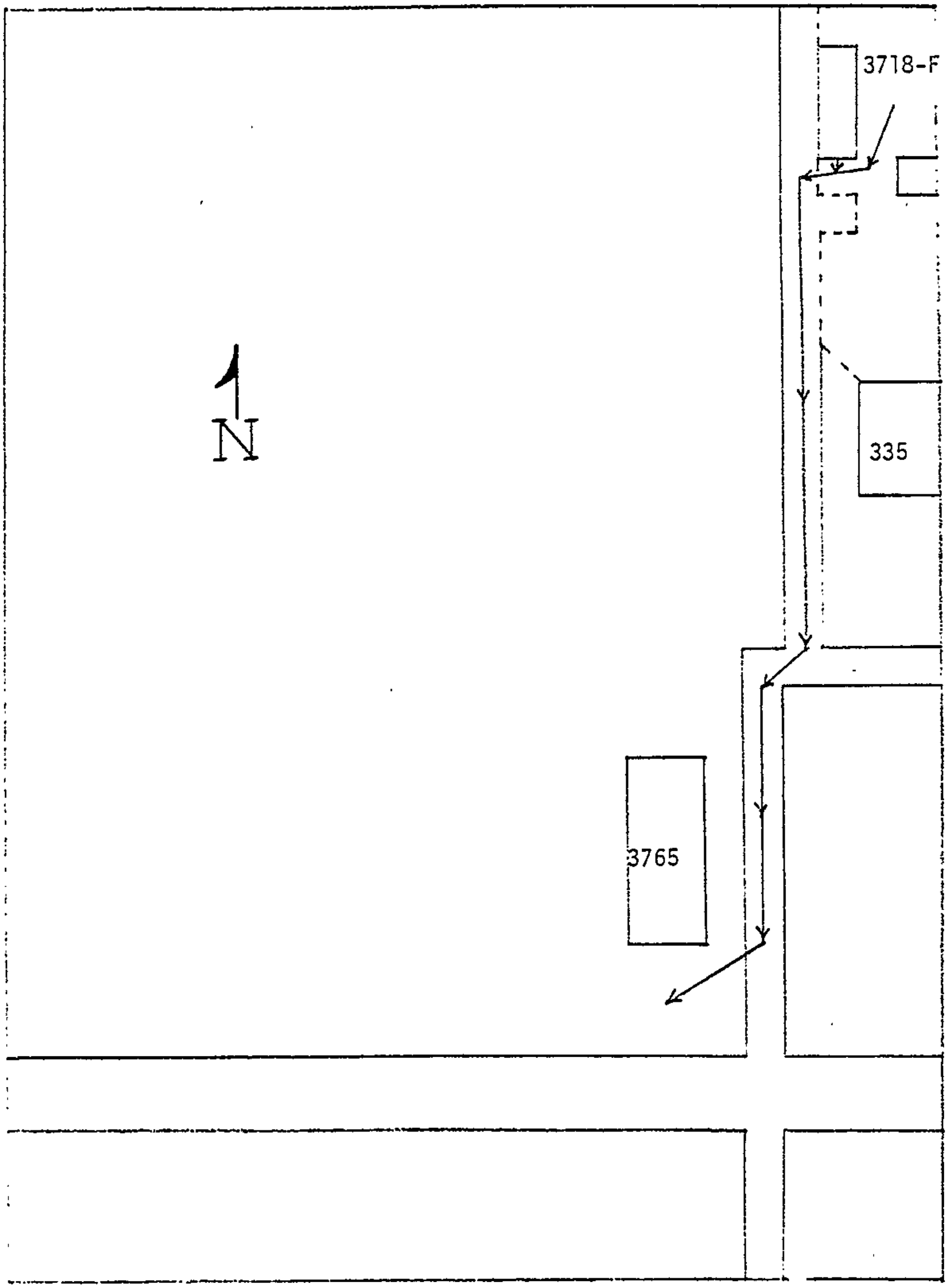
7.1 Each employee new to this facility shall review this Building Emergency Procedure (BEP) before starting an assignment.

7.2 All building occupants are required to review the BEP every six months.

7.3 An annual review of this BEP will be made by the Building Emergency Director. Potentially weak areas will be identified and changed.

## 8.0 TERMINATION OF EMERGENCY

Termination of emergency may be declared by the BED or his alternate. However, once the WHC emergency staff is activated, only they can terminate the emergency If the R. L. Emergency Director is involved, only he can officially terminate the emergency. Regardless, the 3718-F BED must be consulted before reentry to the facility is initiated.




EVACUATION ROUTE

# CHECK LIST

## THREATENING TELEPHONE CALLS

INSTRUCTIONS:

1. Be calm. Be courteous. Listen, do not interrupt the caller.
2. Keep caller on line, ask him/her to repeat message. Pretend difficulty with hearing.
3. Record message and information below.

EXACT MESSAGE:

4. Keep caller talking. If bomb or explosive is indicated and caller seems agreeable to further conversation, ask questions like:

WHEN WILL IT GO OFF?

WHERE IS IT LOCATED?

Inform caller that building is full of people and a bomb could result in death or injury to innocent people.

WHAT DOES IT LOOK LIKE?

WHAT KIND IS IT?

WHY WAS IT PLACED?

HOW DO YOU KNOW SO MUCH ABOUT IT?

WHO PUT IT THERE?

WHERE ARE YOU CALLING FROM?

WHAT IS YOUR NAME AND ADDRESS?

5. After the conversation has ended, IMMEDIATELY call the WHC Emergency Support Organization (6-5000)
6. Complete the reverse side of this check list as completely as you can.
7. Stand by for follow-up instructions.

(TO BE COMPLETED AFTER CALL)

THREAT RECEIVED:

Date ____________ Time Of Call ____________ Time Caller Hung Up ____________ HEDL Extension Number ____________

CALLER'S IDENTITY:

SEX: Male ☐ Female ☐ ADULT ☐ JUVENILE ☐ APPROXIMATE AGE (Years)_____

Did caller seem familiar with building or facility by his description of the bomb location?

YES ☐ NO ☐ Explain ______________________________________________

______________________________________________________________

______________________________________________________________

ORIGIN OF CALL:

Local ☐ Long Distance ☐ Phone Booth ☐ Internal (from within Hanford) ☐

| VOICE CHARACTERISTICS | | SPEECH | | LANGUAGE | |
|---|---|---|---|---|---|
| ☐ Loud | ☐ Soft | ☐ Fast | ☐ Slow | ☐ Excellent | ☐ Good |
| ☐ High Pitch | ☐ Deep | ☐ Distinct | ☐ Distorted/ Broken | ☐ Fair | ☐ Poor |
| ☐ Raspy | ☐ Pleasant | ☐ Stutter | | ☐ Foul | ☐ ______ (Other) |
| ☐ Intoxicated | ☐ ______ (Other) | ☐ Slurred | ☐ Nasal | ☐ Peculiar Grammar | |
| | | ☐ Normal | ☐ Lisp | ☐ Use of certain words or phrases | |
| | | ☐ Disguised | ☐ ______ (Other) | | |

| ACCENT | | MANNER | | BACKGROUND NOISES | |
|---|---|---|---|---|---|
| ☐ Local | ☐ Not Local | ☐ Calm | ☐ Angry | ☐ Office Machines | ☐ Bedlam |
| ☐ Foreign | ☐ Regional | ☐ Rational | ☐ Irrational | ☐ Factory Machines | ☐ Airplanes |
| ☐ Race | ☐ ______ (Other) | ☐ Coherent | ☐ Incoherent | ☐ Street Traffic | ☐ Trains |
| | | ☐ Deliberate | ☐ Emotional | ☐ Animals | ☐ Voices |
| | | ☐ Sincere | ☐ Laughing | ☐ Quiet | ☐ Music |
| Explain: | | ☐ Confident | ☐ Nervous | ☐ Mixed | ☐ Party Atmosphere |
| | | | ☐ ______ (Other) | ☐ ______ (Other) | |

NAME OF PERSON RECEIVING CALL: ______________________________

BUILDING: ______________________________ ROOM: ____________

TELEPHONE EXTENSION NUMBER: ______________________________

# LARGE SODIM FIRE FACILITY (105-DR)

RETIRED AREAS (RA)

| UNC NUCLEAR INDUSTRIES<br>EMERGENCY RESPONSE GUIDES | Document No. UNI-M-2 VOL4 REV1 | Guide No. |
|---|---|---|
| | Date Issued 5-31-85 | Page No. 2 of 3 |
| | Supersedes Issue Dated NEW | |
| Subject: TABLE OF CONTENTS | Issued By: SURVEILLANCE & MAINTENANCE | |

## 100-K AREA

100-D AREA

INTRODUCTION

A. The following provisions have been made to help assure emergency preparedness at 100-D Area.

EVENT ACTION RESPONSES

A. Classified material guide requires that classified material not be left out and unattended (by cleared personnel or by uncleared personnel). Should an emergency occur, all classified material shall be secured prior to leaving.

B. When a handicapped person is in 100-D Area, the 100-D Area Manager involved shall assign a monitor to him while he is in the area should an emergency response occur.

C. Rockwell is providing a bus for evacuation use by day shift personnel. A bus electrical heating connection has been installed on thenorth end of the 190-D Tank Bay Building (facing east). Rockwell has inspected and found this satisfactory. A bus is assigned and parked there in the case of an emergency.

D. The Hanford Meteorological Station (HMS) has been required verbally to add 1703-D Building, 100-D Area Emergency Director, (G. L. Erickson) to the severe weather warning call list. Specifically, warnings and forecasts shall be for tornado weather conditions, tornadoes, and winds of 100 mph or greater. This request will be documented and copies of same sent to the HMS regarding the call list. The Emergency Director shall, upon receipt of warning of tornado spawning weather, establish 100-D Area tornado watch. If weather or conditions make a watch impractical, the watch should be abandoned and the personnel cautioned to remain inside the buildings. If a tornado or a funnel cloud is seen from D Area or the Emergency Director requests personnel to take additional cover, D Area personnel are to assemble in the 190-D Building Pump Bay basement (see attached 100-D Evacuation Plan).

E. The 100-D Area Emergency Director or delegate will provide Environmental and Occupational Safety (E&OS) with a critique of each evacuation practice within five working days of the practice event.

F. 100-D Area Emergency Director will arrange for documented training as it becomes available.

PROCEDURE AUTHORIZATION

Document: UNI-M-2 VOL4 REV1

New: ____________

ERG Number: 1-D

Rev. No. 1

ERG Title: Emergency Preparedness

Page 2 of 2

Date Issued: 6/11/85

Supersedes Issued Date: 5/17/85

APPROVALS

[signature] 6/10/85

Procedure Preparer/Reviser — Date

[signature] 6/11/85

J. E. Kaveckis, Manager — Date
Development Services

[signature] 6/11/85

G. L. Erickson, Manager — Date
Systems & Equipment Development

[signature] 6/11/85

D. F. Brendel, Manager — Date
Environmental & Occupational Safety

## SCOPE

This Area Emergency Plan designates UNC's and other tenant contractor's responsibility assignments for 100-D Area during an emergency situation. This plan includes signals for alerting all personnel, a system of accounting for all D Area personnel within a ten (10) minute accountability limit, assigns responsibilities for the Area Emergency Director (AED), Managers, and employees and gives instructions for immediate action.

## EMERGENCY RESPONSIBILITIES

A. 100-D Area - Area Emergency Director (AED)

The Manager, Systems & Equipment Development, is designated as the 100-D Area Emergency Director. The alternate AED is, as listed in the following order:

1. Manager, Mechanical Development
2. Manager, Development Service
3. Manager, Systems Development
4. Manager, Instrument/Electrical Development

B. 100-D Area, Area Emergency Director (AED) is responsible for:

1. Determining and executing, action required during an emergency, including partial or total area evacuation as required.

2. Notifying the following, as required:

a. 100-D Area Tenants: EMERGENCY CALL LIST

| | | | | |
|---|---|---|---|---|
| | PNL | 185-D | (Hinkle) | 3-1682 |
| | RHO | 151 Substation<br>182D/183D Water Treatment | (Electrical System Dispatcher) | 3-2321<br>or<br>3-1452 |
| | HEDL | 105-DR | (Cook) | 3-1420 |
| | UNC | 105-D Decommissioning | | 3-4601 or<br>3-4360 |
| b. | UNC | 105-N Control Room Emergency Number | | 3-3333 |
| c. | RNO | Patrol Operations Center (PCC) | | 811 |
| d. | UNC | 100-N RM Office | | 3-1624 |

B. Continued

3. Accounting for personnel in 100-D Area through D Area managers and supervisors and 1703-D visitor check in/out log.

4. Establishing an event Site Control Station at 1703-D Building for events internal to 100-D Area.

5. Forming a caravan, establishing a route of travel and a destination in the event of an evacuation.

   NOTE: When a handicapped person is in 100-D Area, the AED (or his designate) shall assign a monitor to him/her while he/she is in the Area should an emergency occur.

C. 100-D Area Managers and Supervisors are responsible for:

NOTE: S&ED subsection managers (or delegates) to report personnel attendance daily to Manager, S&ED office.

1. Their employees' welfare and safety in case of an emergency. Each manager or supervisor for UNC, 100-D tenants and other Hanford contractors are responsible to account for personnel in their group and report to 100-D AED during an emergency.

2. Notifying Hanford Patrol (3-1643) when personnel are working overtime, shifts, or week-ends, and supplying the building and phone numbers where the employees may be reached.

3. Securing classified material and safes.

D. Employees are responsible for:

1. Complying with instructions stated herein during an emergency situation.

2. Providing assistance as directed my manager or AED.

3. Informing manager (or designate) whenever leaving the area (for accountability purpose).

4. Securing classified materials and safes.

E. 100-D Area "Rover" is responsible for:

1. Securing a government vehicle and a portable radio.
2. Searching area and buildings to warn those who failed to respond to emergency.
3. Reporting results to the AED.

F. 100-D Area South Gate Monitor is responsible for:

1. Securing a government vehicle and portable radio and proceeding to the south gate immediately.
2. Checking out at 1703-D upon leaving D Area.
3. Reporting to any manager at the 1703-D staging area (see Attachment I) in the event of an emergency.

NOTE: Visitors are personnel who are no 100% assigned to 100-D Area whether UNC, Hanford Contractor, DOE, or off-site personnel.

EMERGENCY SIGNALS

| SIGNAL | MEANING | ACTION |
|---|---|---|
| Steady Tone | Area Evacuation | Go to Staging Area 1703-D Parking Lot |
| Wavering Tone | Take Cover | Take cover in the nearest building. Shut doors and windows. |
| Gong | Fire | Vacate building(s) to a safe area outside. |
| Crash Alarm Phone* A Steadily Ringing Phone | Emergency Communications and/or /evacuation | Pick up phone and Listen. DO NOT TALK! Relay Message. |

*NOTE: Crash alarm phones are located in the 105-DR, 185-D, 189-D and 1703-D Buildings.

EMERGENCY EVACUATION INSTRUCTIONS

A. Area Emergency Director (AED)

In the event of an emergency, the AED will:

1. Determine action required and sound appropriate alarm.
2. Notify required emergency numbers. (See AED responsibilities B.2 for call list.) (Pre-delegated)
3. Establish a Site Control Station at the 1703-D Building (as required).
4. Proceed to staging area to direct action.
5. Have SWP equipment and supplies taken to SWP Staging Area and call (pre-delegated) RM Office (3-1624) for RM Survey vehicle.
6. Receive accountability reports from Managers and Rover.
7. Establish a route of travel, a destination, and form a caravan in the event of an evacuation.

B. Managers, Supervisors and Tenants

In the event of an emergency 100-D Area managers and supervisors will:

1. Proceed with a list of their personnel, to 100-D Staging Area at 1703-D parking lot (see Attachment I for location of staging area).

   NOTE: Have a current personnel list so it can be obtained quickly during an emergency.

2. Account for employees as they check in at the Staging Area sign designating their group.
3. Release personnel to their vehicles (cars/bus) or to the shelter upon check in or as directed by the AED.
4. Report those present and missing to the AED (1703-D Staging Area) as soon as all employees and visitors reporting are checked off.
5. Release vehicles to form a caravan on notification from the AED.

B. Managers, Supervisors and Tenants (continued)

6. Provide assistance as directed by the AED.

C. 100-D Personnel

In the event of an emergency 100-D Area personnel will:

1. Stop work, secure all classified material as quickly as possible, and proceed immediately to the 1703-D Staging Area (shown in Attachment 1).

2. Report to their manager or supervisor immediately upon reaching the staging area. (Assemble at location designated by your groups sign at the 1703-D Staging Area).

3. Report any known information regarding the emergency including persons who may be in the event location to your supervisor.

4. Wait to be released to vehicles (bus) or shelter area by your supervisor. (See Attachment 1 for location of shelter area.

   In the event of an emergency, the 100-N RM office (3-1624) has provided a RM Survey vehicle which will be on call for the 100-D AED to survey 100-D personnel in SWP clothing.

5. Provide assistance as directed by supervisor or AED.

6. Any S&ED personnel at 100-N Area during an emergency shall respond according to 100-N Area Emergency Actions and report to the "other personnel" sign at the 100-N Staging Area. Inform a manager of your presence and whether you have a vehicle available.

7. Off-shift personnel - your manager must inform Hanford Patrol (3-1643) of your presence and location. The shift manager at 100-N is AED, during off hours, for 100-D Area if none of the alternate AED managers are on-site.

D. Personnel in Special Work Procedure Clothing (SWPs)

In the event of an emergency, personnel in SWP's will:

1. Remove outer set of coveralls and boots before evacuating. (If only one set of coveralls are worn, remove boots only).

2. Follow instructions of supervision if given.

D. Personnel in Special Work Procedure Clothing (SWPs) continued

3. Proceed to SWP Staging Area (shown in Attachment 1).

4. Report to your manager or supervisor through the SWP) check-in designate. (Be careful not to touch anyone).

5. In the event of an emergency, the 100-N RM Office (3-1634) has provided a RM Survey vehicle which will be on call for the 100-D AED to survey 100-D personnel in SWP clothing.

6. The AED (SWP designate) will have a clean supply of SWP's and plastic bags available for personnel in SWPs at the SWP Staging Area. The old SWPs should be removed, put in the plastic bags (if time permits), and clean SWP's put on.

7. It may be necessary in the event of an emergency evacuation, to place SWP personnel in government vehicles (designated by the AED) to transport them off-site.

E. 100-D Area Rover

The function of the 100-D Area evacuation Rover in an emergency is to perform, as quickly as possible, an inspection of D Area, located any personnel that have not responded to the emergency signal, inform them of their responsibility and report the results to the AED.

In the event of an emergency, the 100-D Area Rover will:

1. Report immediately to his/her manager or any available manager and inform him that the duties of Rover are being fulfilled.

2. Secure a government vehicle and a radio.

3. Drive major roads within 100-D Area looking for personnel who are not responding to the evacuation alarm.

4. Check inside any buildings (if unlocked) when vehicles are parked outside. Infrom anyone found of the requirement to assemble at the 1703-D Staging Area.

5. Keep AED updated by radio.

6. Return to Staging Area.

F. 100-D Area South Gate Monitor

The function of the 100-D South Gate Monitor in an emergency is to proceed, as quickly as possible, to the South Gate and control access and egress from 100-D Area.

In the event of an emergency, the South Gate Monitor will:

1. Report immediately to his/her manager or any available manager and informing him that the duties of the South Gate Monitor are being fulfilled.

2. Secure a government vehicle and a radio and proceed to the South gate.

3. Control access and egress of D Area by informing those entering or leaving 100-D Area of the requirement to assemble at the 1703-D Staging Area.

4. Personnel names and contractors names of those failing to comply should be reported to the AED.

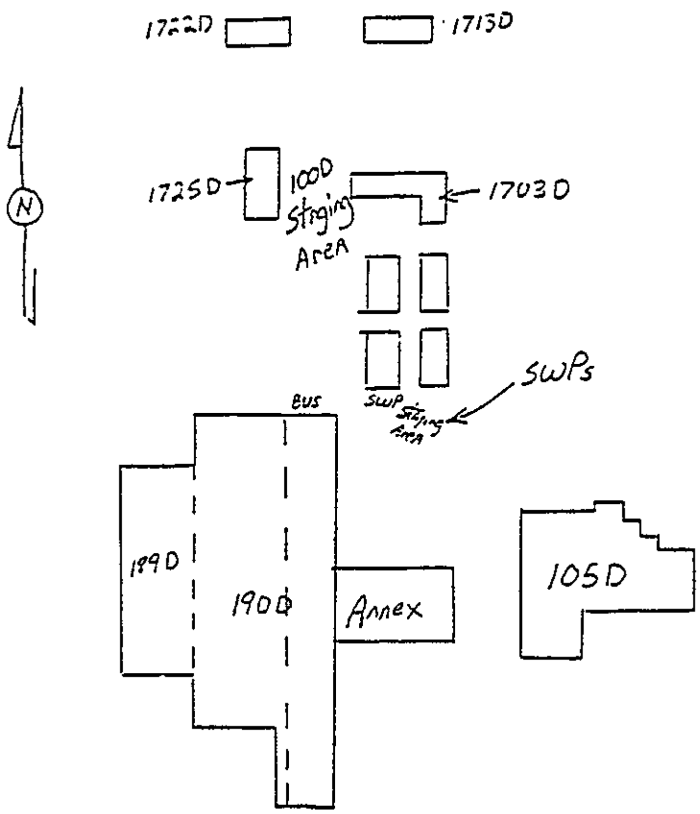
G. DISCUSSION

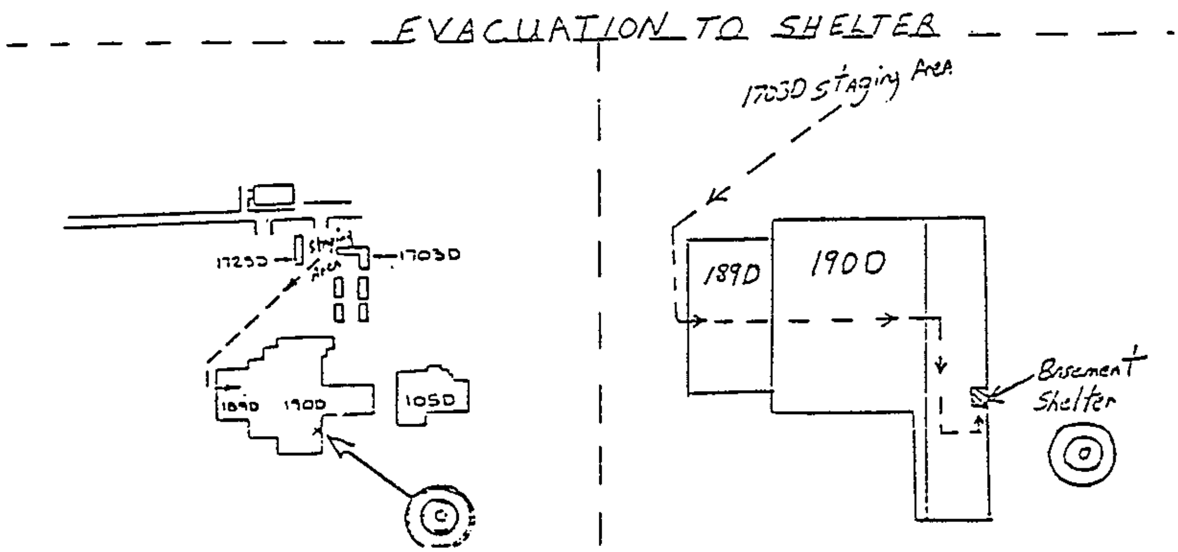
Rockwell is providing a bus for evacuation use by day shift personnel. A bus electrical heating connection has been installed on the north end of the 190-D Tank Bay Building (see Attachment 1 for location). Rockwell has inspected and found this satisfactory.

All personnel arriving by private vehicle shall leave by same and take only as many persons as their vehicle will safely hold.

| UNC NUCLEAR INDUSTRIES | Document No. UNI-M-2 VOL4 REV1 | Guide No. 2-D |
|---|---|---|
| EMERGENCY RESPONSE GUIDES | Date Issued 5-31-85 | Page No. 8 of 9 |
| | Supersedes Issue Dated 7-28-81 | |
| Subject: 100-D AREA EMERGENCY PLANS | Issued By: SYSTEM & EQUIPMENT DEVELOPMENT | |

ATTACHMENT I



PROCEDURE AUTHORIZATION

Document: UNI-M-2 VOL4 REV1

New: ____________

ERG Number: 2-D

Rev. No. 1

ERG Title: 1000 Area Emergency Plan

9 of 9

Date Issued: 6/11/85

Supersedes Issued Date: 5/17/85

APPROVALS

J D Walker

Procedure Preparer/Reviser

6/11/85

Date

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6/11/85

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6/11/85

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D. F. Brendel, Manager
Environmental & Occupational Safety

6/12/85

Date

# UNC NUCLEAR INDUSTRIES

EMERGENCY RESPONSE GUIDES

| Document No. | Guide No. |
|---|---|
| UNI-M-2 VOL4 REV1 | 3-D |
| Date Issued: 5-31-85 | Page No.: 1 of 3 |
| Supersedes Issue Dated: 5-17-85 | |

Subject: CHEMICAL RELEASE 100-D AREA

Issued By: SYSTEMS & EQUIPMENT DEVELOPMENT

INDICATIONS

A. A greenish-yellow mist (chlorine is the largest volume chemical stored at 100-D Area.

B. Noxious or unusual odors.

C. Eye, nose or skin irritation.

D. Alert from visual observer or a pressure leak sound.

NOTE: There are no automatic alarm systems for chemical spills.

IMMEDIATE ACTIONS

A. Notify 100-D Area, Area Emergency Director (AED) (3-1503) and the Patrol Operations Center (POC) (811) of the situation and alert them to any exposed or stricken personnel.

B. Close valve to the source when possible.

C. Evacuate upwind and away from the incident.

CAUTION: Only authorized personnel, properly equipped, may initiate re-entry. Re-entry of an evacuation area requires approval of UNC Emergency Control Center Cadre. (UNI-M-2 VOL1, Section 5).

SUBSEQUENT ACTIONS

A. Assist and direct emergency personnel.

B. The Area Emergency Director shall determine potential hazards from the chemical release and the need for a partial or total 100-D Area evacuation (reference "Emergency Response Guide" 1-D).

DISCUSSION

A. Any chemical release resulting in a serious personnel or environmental hazard such as chlorine gas, acid fumes, or a chemical release to the Columbia River, requires notification to the 100-D Area, Area Emergency Director (3-1503) and the POC (811).

B. UNC stores chlorine for site-wide use at 100-D Area. The chlorine is stored in one-ton cylinders on the chlorine racks located outside the 183-D Building.

INFORMATION

A. Chlorine gas is a severe respiratory irritant. In concentrations exceeding 15 ppm, it will irritate the mucous membranes, the respiratory system, the skin and eyes; 30 ppm is the least amount causing coughing and may cause collapse and prevent escape; 40 to 60 ppm is dangerous in 1/2 to 1 hour; and a few breaths at 1,000 ppm is rapidly fatal. In extreme cases, the difficulty in breathing may increase to the point where death can occur from suffocation. If a person is overcome by chlorine, transfer him to fresh air as quickly as possible and give cardiopulmonary resuscitation (CPR) if needed. If he is conscious, flush his mouth with water and get him to First Aid quicly.

There is no such thing as becoming hardened to exposure. If caught in chlorine, hold the held high, breathe short and shallow, try to avoid coughing, and move into the wind and uphill. Avoid unnecessary exertion.

Liquid chlorine is a skin and eye irritant and contact produces "burns". Even a person well protected with breathing apparatus should have chlorine wetted clothing removed as quickly as possible. Liquid chlorine in the eyes will cause severe damage. Contact with skin or eyes requires their immediate washing with large quantities of water. Avoid rubbing. Call (811) for ambulance.

B. The Fire Department has encapsulation equipment and procedures to seal leaks.

C. If the leak cannot be controlled by local persons, the following vendors have available assistance:

- Hooker Corporation, Tacoma, WA (206) 283-2661.
- Penwalt, Tacoma, WA (206) 572-5500.

PROCEDURE AUTHORIZATION

Document: UNI-M-2 VOL4 REV1

New: ____________

ERG Number: 3-D

Rev. No. 2

ERG Title: Chemical Release 100D Area
3 of 3

Date Issued: 6/11/85

Supersedes Issued Date: 5/17/85

APPROVALS

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Date

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D. F. Brendel, Manager
Environmental & Occupational Safety

6/12/85
Date

# UNC NUCLEAR INDUSTRIES

EMERGENCY RESPONSE GUIDES

| Document No. | Guide No. |
|---|---|
| UNI-M-2 VOL4 REV1 | 4-D |
| Date Issued: 5-31-85 | Page No.: 1 of 3 |
| Supersedes Issue Dated: 7-28-81 | |

Subject: CREDIBLE FAILURE DURING HEDL SODIUM BURN TEST - 100-D AREA

Issued By: SYSTEMS AND EQUIPMENT DEVELOPMENT

INDICATIONS

A. Loud explosion noise from 105-DR.

B. Alert from Patrol Operations Center or from the Sodium Facility.

C. Extreme irritation to eyes and nostrils.

D. Light colored smoke appearance.

IMMEDIATE ACTIONS

A. Nofity 100-D, Area Emergency Director (3-1503).

B. Evacuate upwind or at least 1/2 mile downwind.

C. The Area Emergency Director (AED) or his delegate will:

1. Sound evacuation alarm as required.

2. Notify 105-N Control Room Emergency Number (3-3333) and Patrol Operations Center (811). Request an ambulance as required.

3. Have someone direct the ambulance to injured personnel as required.

SUBSEQUENT ACTIONS

A. Re-entry of an evacuated area required approval of UNC Emergency Control Center Cadre (UNI-M-2 VOL1, Section 5). Re-entry is to be initiated by trained emergency personnel with proper emergency equipment.

B. The AED will determine evacuation requirements and implement evacuation plan as required (Area Emergency Plan - Emergency Response Guide 1-D).

DISCUSSION

A. The facility is operated on a pre-alert schedule. It is constructed to contain all explosion hazards in the event of loss of control. Hazards to personnel will result from exhaust system failure and stack emission. The worst possible condition would be fallout of sodium oxide particles from the stack. The presence of sodium oxide is detectable by the irritations it would cause to the nose and eyes, also by a white smoke appearance. The 100 Area Fire Station is equipped to handle sodium fires. The fire alarm system is in place.

DISCUSSION (Continued)

B. HEDL Supervision (phone 373-1420) will notify S&ED (3-1503) approximately 24 hours prior to burning tests.

C. HEDL is responsible for actions within the burn facility.

PROCEDURE AUTHORIZATION

Document: UNI-M-2 VOL4 REV1

New: ____________

ERG Number: 4-D 3 of 3

Rev. No. 2

ERG Title: Credible Failure During HEDL Sodium Burn Test - 100D Area

Date Issued: 6/11/85

Supersedes Issued Date: 5/17/85

APPROVALS

[signature] 6/11/85

Procedure Preparer/Reviser — Date

[signature] 6/11/85

J. E. Kaveckis, Manager — Date
Development Services

[signature] 6/11/85

G. L. Erickson, Manager — Date
Systems & Equipment Development

[signature] 6/12/85

D. F. Brendel, Manager — Date
Environmental & Occupational Safety

# CONTAINMENT SYSTEM TEST FACILITY (221-T)

# 11.21A CONTAINMENT SYSTEMS TEST FACILITY (CSTF) EMERGENCY PROCEDURES 221-T HEAD-END

## 11.21A.1 EMERGENCY RESPONSIBILITY

The overall responsibility for the protection of facility personnel and property rests with the CSTF manager. This person shall be the Emergency Action Coordinator (EAC) for assigned buildings and is responsible for directing initial action in the event of an emergency. This would include directing the activities of emergency response groups such as Patrol, Fire Department or Radiation Monitoring. If an emergency occurs, the EAC shall remain in charge unless relieved by the Emergency Director (ED). The appointment of alternate or additional EACs may be necessary to assure that every shift of building occupation has one EAC and one alternate.

## 11.21A.2 EMERGENCY ACTION COORDINATOR (EAC) AND ALTERNATES

| | |
|---|---|
| Manager, Containment Systems Test Facility | PAX - 3-2312 |
| Supervisor, CSTF Craft Support Services | 3-2836 |
| CSTF Building Administrator | 3-2464 |

## 11.21A.3 EMERGENCY SIGNALS (Section 6.3.1.1)

11.21A.3.1 Evacuation - Steady Siren - 3 to 5 minutes duration

11.21A.3.2 Take Cover - Wavering Siren

Note: No wavering siren at T-Plant.

11.21A.3.3 Continuous Air Monitor (CAM) Unit - Steady bell tone. Flashing blue or red light in canyon work area.

11.21A.3.4 Fire Alarm

There are no emergency fire gong signals in the 221-T Building. All contacts are made through the Public Address System.

11.21A.3.5 Public Address System (PAX) 49

The PAX phones in the control room, lunch room and office B-1 will be used to receive emergency messages from the Rockwell T-Plant EAC.

11.21A.3.6 Crash Alarm Telephones

| | |
|---|---|
| Manager's Office | 3-2312 |

## 11.21A.4 STAGING AREA(S)

### 11.21A.4.1 Primary Staging Area

The area directly outside the northeast building entrance.

### 11.21A.4.2 Alternate Staging Area

Evacuation bus parking area south of 221-T Building.

## 11.21A.5 EMERGENCY PROCEDURES

11.21A.5.1 Evacuation - T Plant - Steady Siren
11.21A.5.2 Fire and/or Explosion
11.21A.5.3 Bomb Threat - Telephone
11.21A.5.4 Attack by Hostile Factions - Crash Alarm
11.21A.5.5 Loss of Services

- o Electricity
- o Ventilation
- o Water
- o Steam
- o Air

11.21A.5.6 High Level Radiation Alarm
11.21A.5.7 Take Cover - Wavering Siren

### 11.21A.5.1 Evacuation - T-Plant - Steady Siren

Events that may lead to an evacuation are explained in RHO-MA-111, Emergency Procedures, Section 6.3.1. These plus T-Plant originated events require the following action:

Emergency Action Coordinator (EAC)

[ ] If CSTF incident, call 811 - relay pertinent information.

[ ] Notify CSTF personnel to report to the staging area at the northeast side of T-Plant.

[ ] Notify Rockwell EAC (T-Plant) on 3-4329 or 3-4661.

[ ] Assign personnel to shutdown duty.

[ ] Initiate accountability actions. Report missing personnel to the Patrol Operations Center (POC).

[ ] Instruct personnel to board government and private vehicles. Have vehicles report to the 200 West Staging Area and wait for instructions.

[ ] Arrange for transportation for personnel with shutdown duties.

### 11.21A.5.2 Fire and/or Explosion - T-Plant

General fire control planning and response is covered in RHO-MA-111, Emergency Procedures, Section 6.3.3. There are no emergency fire gong signals in the 221-T Building. All contacts are made through the PA and telephone systems. Fire pull boxes are located on the first floor near the exits.

Reporting Fires.

The person discovering the fire shall immediately notify building personnel of the location and nature of the fire via the building PA system.

Individual Responsibility.

Once an individual has reported a fire, he should, within the limits of good judgment, attempt to extinguish the fire using the approved equipment provided.

If the fire is in a Radiation Zone, the minimum respiratory protection required is an assault mask.

Personnel shall immediately leave the building when the fire alarm is given, and retire at least 100 feet upwind. All safes and file cabinets should be closed before leaving.

Emergency Action Coordinator (EAC)

[ ] Call 811 and report the location and type of fire.

[ ] The Building Administrator and Facility Engineer shall provide guidance during the initial fire fighting, decide if the location is to be evacuated, and instruct personnel accordingly.

[ ] The EAC (or alternate) shall meet Fire Protection personnel at the area entrance and direct them to the scene of the fire.

[ ] If the fire is in a zone where contamination is present, notify Radiation Monitoring immediately.

[ ] In the event of an evacuation, the EAC shall:

- o Notify Rockwell T-Plant EAC on 3-4329 or 3-4661.
- o Account for personnel.
- o Determine or pass on directions of exit and destination.
  Dispatch all private and government vehicles.
  Do not await formation of a caravan.

### 11.21A.5.3 Bomb Threat - T-Plant - Telephone

Bomb threat response is covered by RHO-MA-111, Emergency Procedures, Section 6.3.4. Special considerations at T-Plant should be given to the following:

Emergency Action Coordinator (EAC)

[ ] Confer with Emergency Director to determine evacuation/ search needs. (Evacuation Procedure.)

[ ] Refer to RHO-MA-111, Emergency Procedures, Appendices, Section 10.1, Emergency Directory, for Bomb Search Teams.

[ ] Re-entry is authorized by the Emergency Director.

### 11.21A.5.4 Attack by Hostile Factions - T-Plant - Crash Alarm

An attack by hostile factions is covered by RHO-MA-111, Emergency Procedures, Section 6.3.5. Normally, T-Plant will be alerted of the impending attack via crash alarm telephones.

Emergency Action Coordinator (EAC)

[ ] Follow directions given by Patrol.

[ ] Evacuate, if directed, using Evacuation Procedure.

[ ] Inform and direct personnel of needed action over the PA system.

### 11.21A.5.5 Loss of Services - T-Plant - 221-T

#### 11.21A.5.5.1 Electricity.

Loss of electricity to these facilities does not constitute an emergency situation.

11.21A.5.5.2 Ventilation.

Loss of ventilation to these facilities does not constitute an emergency situation.

11.21A.5.5.3 Water.

Loss of water to these facilities does not constitute an emergency situation, unless fire or explosion is involved. In that case the Fire Department would provide the water for fire control.

11.21A.5.5.4 Steam.

Loss of steam to these facilities does not constitute an emergency situation.

11.21A.5.5.5 Air.

Loss of instrument air to these facilities does not constitute an emergency situation.

11.21A.5.6 High Level Radiation Alarm - Steady Ringing Bell, Red or Blue Flashing Lights.

[ ] All personnel shall evacuate the canyon work area. Report alarm to the Building Administrator.

[ ] Building Administrator shall notify Rockwell of alarm on 3-1713.

[ ] Do not re-enter canyon work area until notified by Rockwell.

11.21A.5.7 Take Cover - T-Plant - Wavering Siren.

Take shelter in nearest building available. Shut doors and windows and wait for further instructions. See Generic Procedure, RHO-MA-111, Emergency Procedures, Section 6.3.5.

Notification to "take cover" via crash alarm message and PAX system.

NOTE: No Wavering Siren at T-Plant

# 11.21B STRONTIUM SEMIWORKS COMPLEX EMERGENCY PROCEDURES

## 11.21B.1 EMERGENCY RESPONSIBILITY - STRONTIUM SEMIWORKS COMPLEX

This emergency plan outlines responsibility for the protection of the Strontium Semiworks Complex and personnel performing decontamination and decommissioning work at the facility. The overall responsibility for this facility lies with the building landlord and/or the designated facility Emergency Action Coordinator (EAC). The EAC will direct and coordinate initial action taken in the event of an emergency and shall remain in charge until relieved by the Emergency Director (ED).

## 11.21B.2 SPECIFIC BUILDINGS/GROUNDS COVERED

| | Building Number | Description |
|---|---|---|
| 1. | 201-C Building | Process Facility |
| 2. | 271-C Building | Acqueous Makeup and Control Building |
| 3. | 291-C Building | Exhaust Ventilation System |
| 4. | 241-CX | Underground Tanks |
| 5. | 276-C Building | Solvent Handling Facility |
| 6. | 215-C Building | Air Compressor Building |

## 11.21B.3 EMERGENCY CHAIN OF COMMAND

Building Landlord - Manager, Decontamination & Decommissioning - 3-4329

Emergency Action Coordinator - Shift Support Manager, D&D Ops. - 3-3114
(Also radio contact on Operations frequency)

## 11.21B.4 EMERGENCY SIGNALS

### 11.21B.4.1 Evacuation - Steady Siren - 3 to 5 minutes duration

The 200 Area Evacuation Siren will be audible at this facility. There will be no activation capability at this complex.

### 11.21B.4.2 Take Cover - Wavering Siren

The 200 Area Take Cover siren will be audible at this facility. There will be no activation capability at this complex.

11.21B.4.3 Fire Alarm

The nearest fire alarm is located at the 209-E facility.

11.21B.4.4 Crash Alarm Telephones

The closest 200 Area crash alarm telephone is located in the 209-E Building, Room 11, Phone 3-2841. Contact this phone number for information.

## 11.21B.5 STAGING AREA

- Primary Staging Area - MO-317 in front of 2707-C Building.

## 11.21A.6 EMERGENCY PROCEDURES

11.21B.6.1 Evacuation/Fire/Explosion

Evacuation from a facility may be required in the event of a fire, explosion or a bomb threat. Evacuation is indicated by a steady siren or a fire alarm. If an evacuation is required, the following steps should be taken:

[ ] The Emergency Action Coordinator (EAC) will assure that all building occupants are notified to evacuate. Relay information to Patrol Operations Center (POC) on 811.

[ ] Building personnel will collect personal belongings (coats, hats, purses, etc.) and evacuate to the staging area.

[ ] The EAC will account for personnel. (All persons evacuating the building will check in with their immediate supervisor or the EAC.)

[ ] The EAC will report missing personnel to the Emergency Director (ED) and stand by to assist emergency response personnel as needed.

[ ] Personnel will remain at the staging area until further instructions are received from the EAC or the Emergency Director.

[ ] Be alert for emergency response vehicles - Stay Out of the Way!

11.21B.6.2 Bomb Threat - Telephone

A bomb threat received at any location on the site requires some immediate steps to be taken:

[ ] Obtain as much information from the caller as possible. Write down all information received immediately after caller hangs up.

[ ] Call 811. Relay this information to the Patrol Operations Center.

[ ] Contact the building EAC.

[ ] The EAC will notify building personnel to evacuate to the staging area.

[ ] Before evacuating, personnel should look around their immediate work area for any unusual or new objects. DO NOT TOUCH these items. Report them to the EAC.

[ ] Account for all personnel.

[ ] Provide assistance to emergency response personnel where needed.

[ ] Re-entry to the facility will be authorized by the Emergency Director and/or the EAC.

11.21B.6.3 Contamination Spread - CAM Alarm

Contamination spread can occur at any time when handling radioactive material. When there is a contamination release, there is a potential for some of the material to become airborne. Immediate and appropriate reaction to the release can substantially limit the extent of the contaminated area and reduce the potential for personnel exposure, both internal and external.

Emergency Signal. Continuous Air Monitors (CAM) are located at work sites where there is a potential for a contamination release which could result in airborne radioactivity. These CAMs have audible and visual alarms which are set to activate when airborne radioactivity is detected above levels prescribed in RHO-MA-220 and RHO-MA-172.

Immediate Action/Individual Responsibility

- If a CAM alarms in your immediate area, hold your breath.
- Leave the immediate area and get one physical barrier away. (If in the open, go UPWIND.)
- Close the door when leaving the subject site and call for help, or contact Radiation Monitoring, if possible.
- Call 811 and the appropriate responsible manager.
- Minimize movement to avoid the spread of contamination.
- Follow the Radiation Monitor's directions. DO NOT put on a mask until directed by RM. DO NOT re-enter until directed by RM.

Management Responsibilities [Emergency Action Coordinator (EAC)].

[ ] Call 811 and provide information as required.

[ ] Contact management chain.

[ ] Coordinate information from scene and provide assistance requested by personnel performing stabilization and recovery.

[ ] Maintain a log of all actions and communications.

[ ] Remain in contact (phone or radio) with stabilization forces and management until relieved by a superior.

### 11.21B.6.4 Take Cover - Wailing Siren

An emergency take cover situation may result from a serious plant incident (radioactive liquid and/or gaseous release, toxic material spill, etc.), natural phenomena (volcanic eruption, tornado, etc.), or a national emergency. Notice to take cover may be transmitted by Patrol via crash alarm telephone systems. Instructions will be given to take cover inside the nearest building structure and wait for further information. Facility managers may also activate facility take cover plans for incidents that pose a serious and immediate threat.

Note: The wailing siren has a long waver cycle. Listen carefully to signal so as not to confuse it with the steady siren.

The following actions should be taken in the event of a Take Cover situation:

[ ] Immediately seek shelter in nearest building.

[ ] Close all windows and doors, reduce ventilation if possible.

[ ] Remain indoors until further directions are given.

## 11.21B.7 SPECIAL HAZARDS

Explosives will be used in this facility for demolition work. Personnel should be aware of special hazards presented by this material. Refer to emergency procedures for explosions/fire (11.21B.6.1.)

The maximum credible accident during demolition of this facility may cause a significant release to the environment. In the event this type of accident occurs, the EAC should provide immediate notification to downwind facilities (i.e., PUREX, 242-A, Tank Farms Operations 272-AW.)

MAINTENANCE AND STORAGE FACILITY (MASF)

# FACILITY PRE-FIRE PLAN

Building No. 437 Master Box No. 4321

B Platoon | Area 400 | Date March 198-

Yes MC Entered | Contractor Westinghouse | Th. X F ___ Yr. 1987

Occupancy MASF/Maintenance & Storage Facility

Special Hazards Two cells in the high bay section are inert for storage of sodium wetted compounds, two are for sodium removal and the two air cells for repair of radiation components.

*Special Hazards Continued Page 2 Yes ☒ No ☐

Exposures 4713-C, Trl's 200, 201 & 202, 4713-D

Special Exposures Possible railroad tanker Cars.

Equipment Response E-3 and E-2

Location of Electrical Disconnect Room 107

Nearest Hydrant #33 at 27'

Water Available 6475

Type of Automatic Alarm Systems Flow switches, smoke detectors, auxiliary boxes.

Type Sprinkler Systems Wet

*See Inspectors Test Valve Location Item No. 11

## COMPOSITION OF FACILITY

Building Size: Length 290' Width 95' Height 48' & 105'

Type Construction Concrete and steel | Framing Steel

Interior Finish Concrete and metal panels | Floors Concrete

Partitions Gypsum board | Exterior Covering Concrete and metal panels

Roof Construction Flat | Roof Covering Metal "Q" deck, tar and gravel

## PLAN OF ATTACK

E-3 to respond and make a straight lay from Hydrant #20, set up advantageously at officers discretion to stop and knock down involved area with hand lines and exposure coverage - hook up to sprinkler system.

E-2 company to respond and make a straight lay from hydrant #33 and assist E-3 company with additional coverage and manpower as needed.

NOTE: Due to ongoing construction activities within facility, this plan should be reviewed annually.

Building Management Representative | Fire Department Officer's Concurrence

A-6200-252.1 (N-1-83)

1. ENTRY:
One walk through door southwest corner
One walk through door northwest corner
One walk through door south end of high bay.
One roll-up door south end of high bay.
One roll-up door north end of high bay.
One walk through door north end of high bay
One walk through door east side of high bay.

2. ELECTRICAL SERVICE & HAZARDS:
Main disconnect and service breakers on transformer located on north side of facility. Switch gear located in Room 107 west of control room. 440 - 220 - 110 V (with service breakers for portions rooms): 203 (mechanical equipment room), 101, 100 and Room 15, alcove and service tunnel, all have 48V distribution panels.

Switches: MCC-1 - 60 T and 200 T Building crane
MCC-1 - 5T and 10 T monorail

CDMF (Cast Decon Materials Facility) section still at this point in time under construction.
CERS (Contaminated Equipment Repair and Storage) section in southwest corner of low bay Room 101 to be completed within a years time.

3. RADIATION - CONTAMINATION:
Small amount of sodium present, at this point in time, in de-con cell (less than a couple of lbs.). Radiation material in de-con I and II and load-out facility northwest end. Low level (-1Mr/Hr) material in Rooms 100 and 101.

4. TOXIC GASES- HAZARDOUS CHEMICALS:
Small amounts of cleaning materials (solvents in de-con.

5. PROTECTIVE CLOTHING:
Regular Fire Department turnouts with masks.

6. RESCUE:
Below grade (alcove and tunnel) considered potential oxygen deficient atmospheres, in particular Room 107, Cell Room 17 and any of the cells in the high bay section. The facility is normally manned during regular working hours; shifts, weekends and holidays only have a power operator on duty.

9. VENTILATION:
Water, fog and prescribed extinguishers.

8. COMBUSTIBLES:
Class "A", "B", "C" and "D".

9. VENTILATION:
Ventilation systems supply fans only shut down on fire alarm condition. Cross ventilation may be used with possible vertical on second floor through roof access door.

10. SALVAGE OPRATIONS:
Follow regular salvage procedures.

11. FIRE DETECTION AND PROTECTION:
Master Box 4321
Trouble transmitter 6-4321
Sprinkler system (wet)
Smoke detectors
House lines
Fire extinguishers

12. HEATING AND VENTILATION:
Electrical heat and refrigerated air.

13. ANNUNCIATOR AND/OR FIRE ZONES:
Zone 1 - second floor mechanical equipment room and offices. Auxiliary box, sprinkler flow switch, smoke detectors.

Zone 2 - high bay. Auxiliary boxes, sprinkler flow switch and house line.

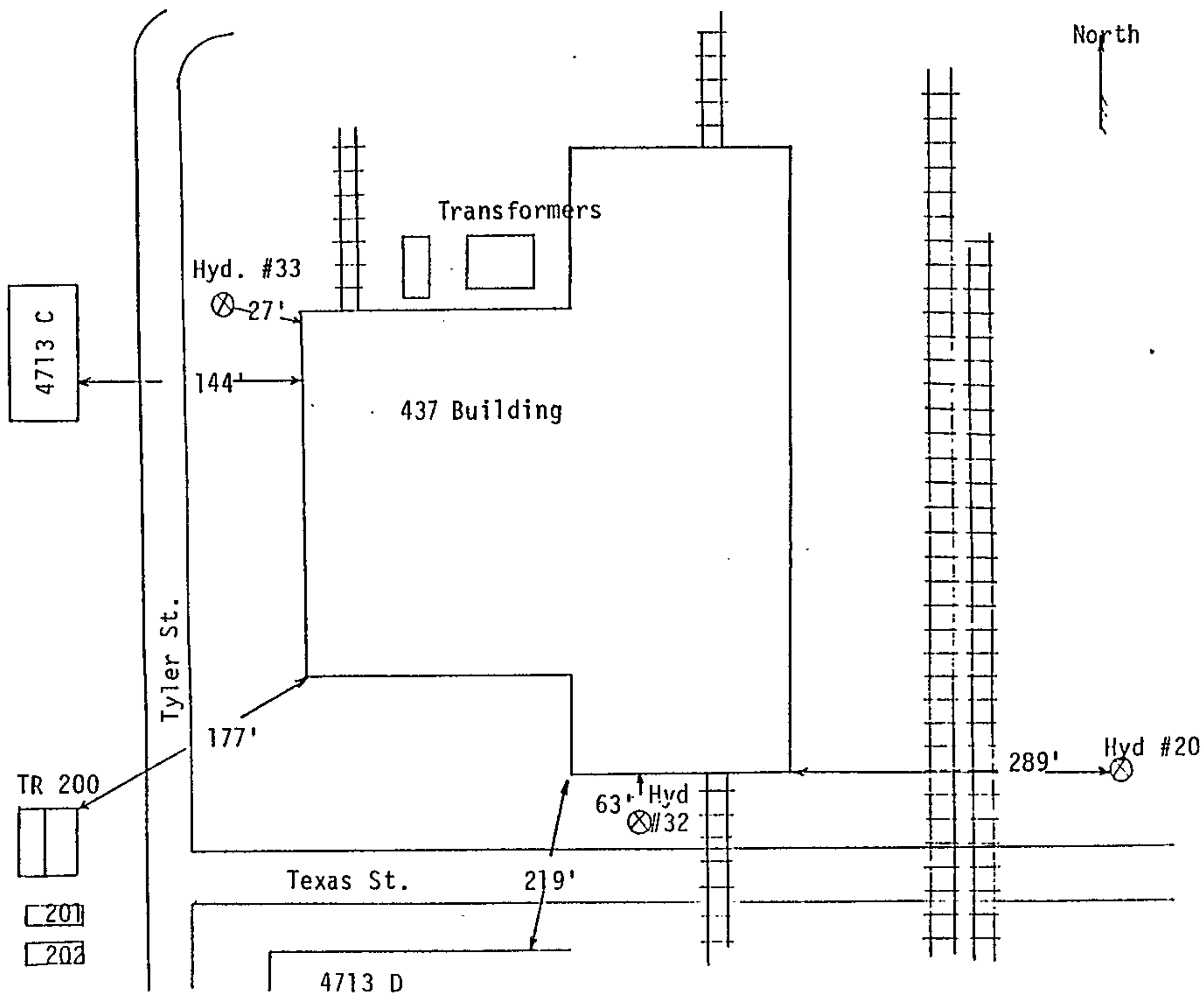
Zone 3 - Spare

Zone 4 - Demineralization room and control room. Sprinkler flow switch and auxiliary boxes.

Zone 5 - Main entrance, Operational Health Physics office, mens and womens change rooms. Sprinkler flow switch and auxiliary boxes.

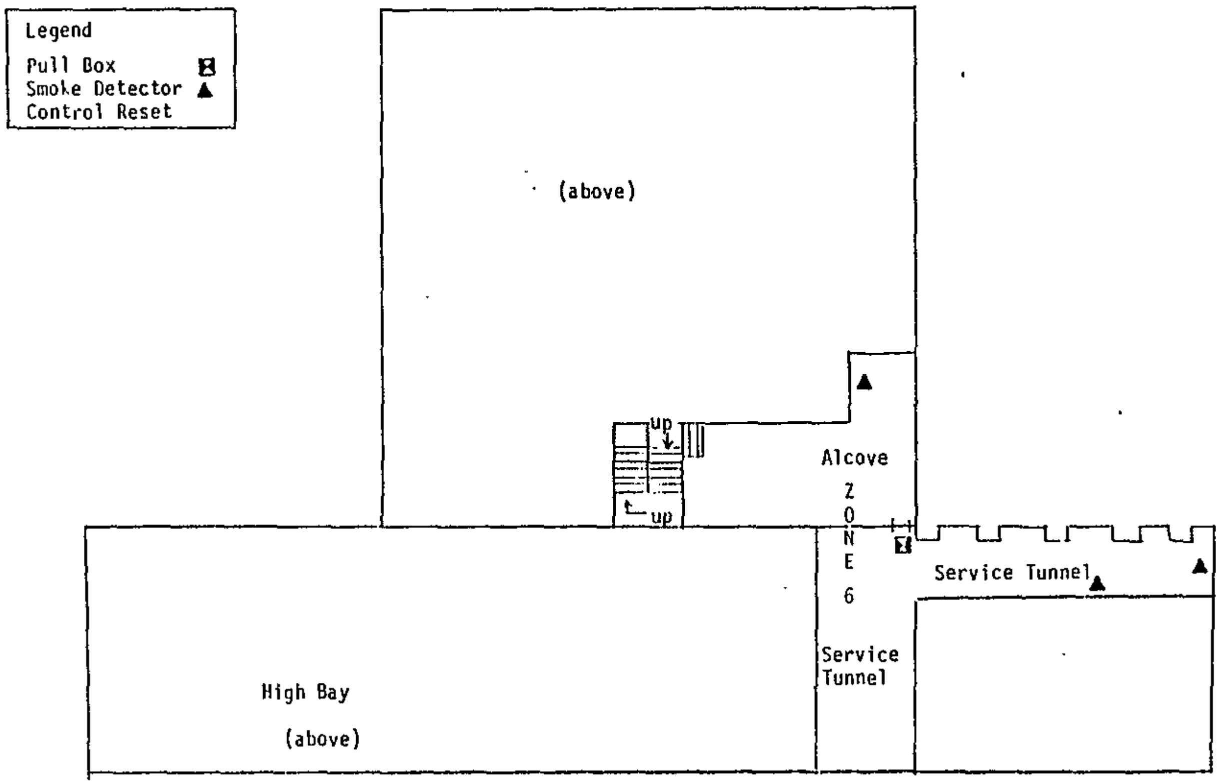
Zone 6 - Lower level alcove and service tunnel. Smoke detectors and auxiliary boxes.

437 Building Site Plan

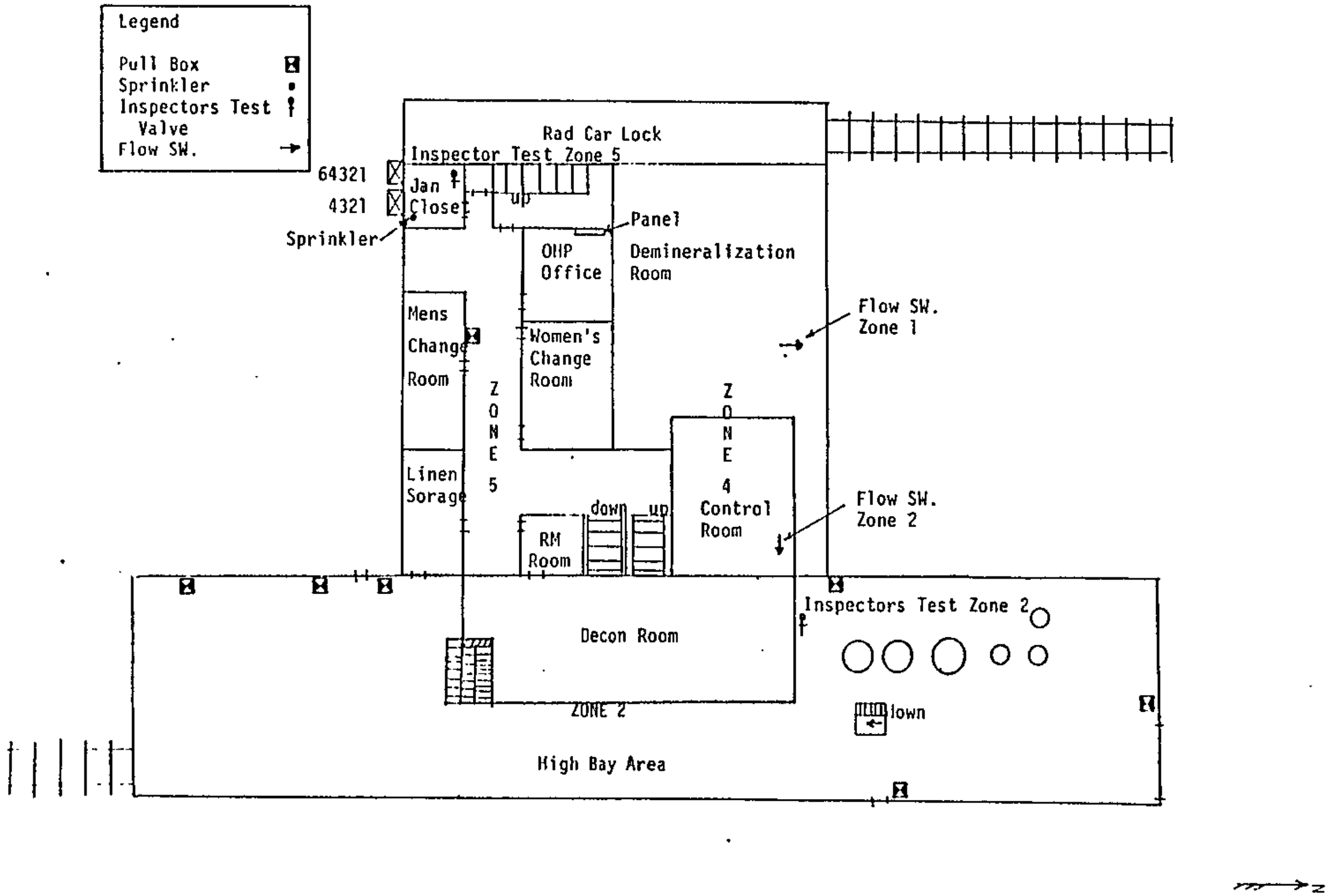


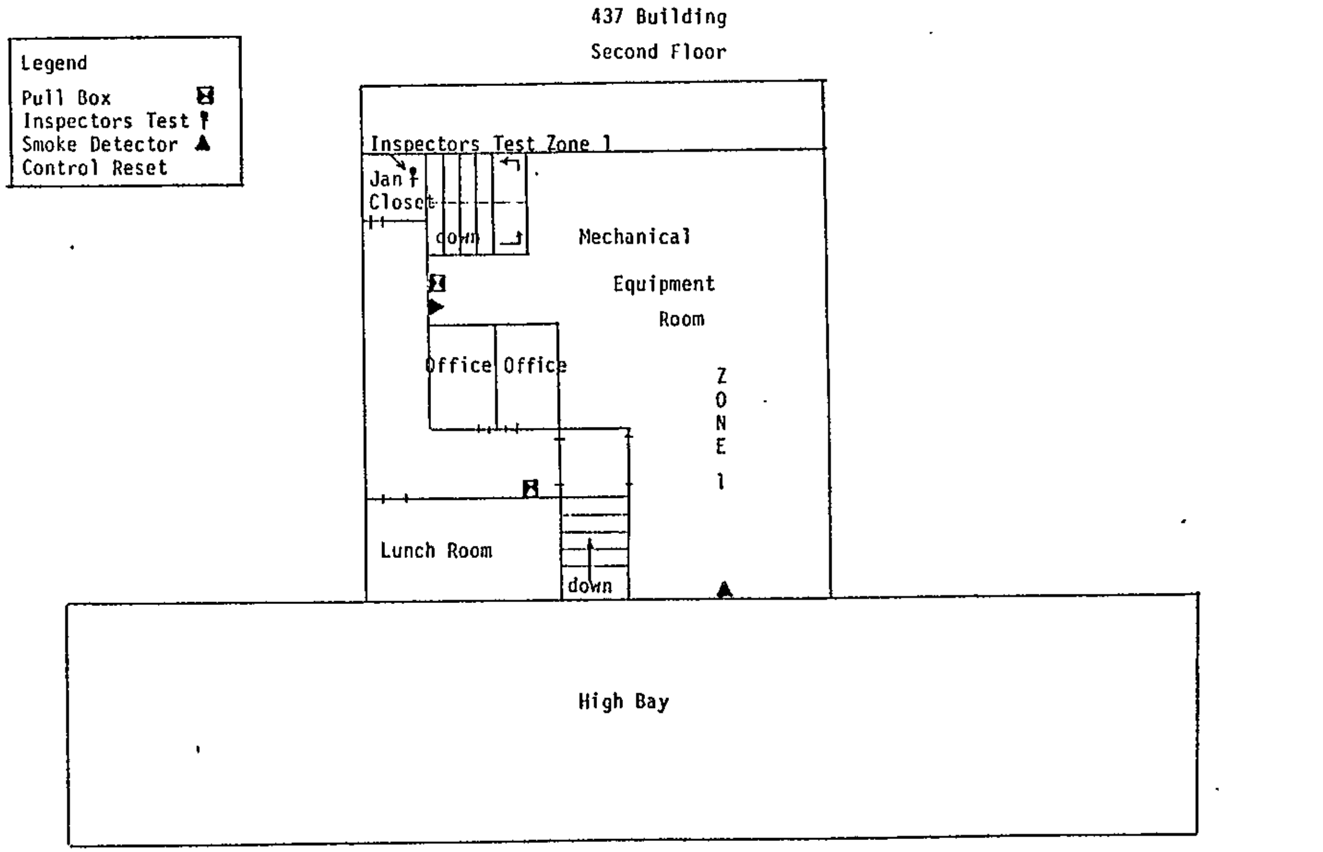
437 Building

Lower Level



# 437 Building
## Ground Floor




437 Building
Second Floor
Legend
Pull Box
Inspectors Test
Smoke Detector
Control Reset
Inspectors Test Zone 1
Jan
Closet
down
Mechanical
Equipment
Room
Office
Office
ZONE 1
Lunch Room
down
High Bay

SODIUM REMOVAL PILOT PLANT (324 SRPP)

MG-139
4/85

# 324 BUILDING EMERGENCY PROCEDURES

APRIL 1985

Approved for Use and Application by:

J J Laidler | 5/16/85

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V. A. Harmon | 5/2/85

V. A. Harmon, Acting Manager, Technical Facilities Administration | Date

WC Craven | 5-16-85

W. C. Craven, Nuclear Facilities Administration | Date

R.O. Zimmerman | 5-14-85

R. O. Zimmerman, Safety Training | Date

W F Brehm | 5-15-85

W. F. Brehm, Building Emergency Director (BED) | Date

# 5.0 BUILDING EMERGENCY PROCEDURES

## 5.1 BUILDING EMERGENCY PLAN

### 5.1.1 Purpose

The purpose of the 324 Building Emergency Plan is to provide employes information necessary to react to emergency situations in order to:

a. Maximize employe safety, minimize the risk to life and provide prompt and efficient treatment for injured persons.
b. Ensure continuity of leadership at all times and in all emergency situations.
c. Minimize the effects of an incident on the health and safety of the general public.
d. Minimize property damage.
e. Assure prompt internal and external communication with responsible authority.

### 5.1.2 Applicability

The information in this plan applies to everyone assigned to or entering the 324 Building.

## 5.2 EMERGENCY SIGNALS

### 5.2.1 Howler (Intermittent AH-OOH-GA)

Meaning: Criticality

Action: Personnel who are inside the building when the howlers sound shall immediately evacuate the building; stop for nothing. All personnel should proceed through personnel crash gate #315 located at the southwest corner of the 324 Building security fence and continue south to the southeast corner of the 309 Building fence. Upon arrival at 309 Building south fence line, all personnel should report to their manager or his representative for accounting. After accounting for personnel assigned to them, all managers or their representative shall report to the Building Emergency Director any missing persons likely to be in the event facility.

Personnel who are outside and hear the howlers alarm at a nearby building shall run at least 100 yards away from the building and go to the nearest staging area. They shall report to the Staging Area Supervisor or to the Personnel Accountability Aide and tell them which buildings they were near when they heard the criticality alarms sound.

5.2.2 Gong (two times per second)

Meaning: Fire

Action: Shutdown equipment if time permits. Lockup or take with you any classified documents. Leave the building by the nearest exit and assemble in the 324 Building staging area, which is the driveway south of the building entrance between the lawn area and the south security fence. All managers should account for their personnel and report any missing persons to the Building Emergency Director. The Building Emergency Director will request assistance from the Fire Department Rescue Crews if rescue efforts are necessary.

5.2.3 Steady Siren

Meaning: Evacuate and Attention

Action: Shutdown equipment if time permits. Lockup or take with you any classified documents. Leave the building by the nearest exit, proceed to the 324 Building staging area, which is the driveway south of the building entrance between the lawn area and the south security fence. Upon arrival at the staging area, all personnel should report to their manager or his representative for accounting. After accounting for personnel assigned to them, all managers shall report to the Building Emergency Director any missing persons likely to be in the event facility. The Building Emergency Director will report all missing persons by the telephone which is located on a power pole at the staging area.

5.2.4 Steady Ringing Telephone

Meaning: Crash Alarm

Action: Answer telephone; relay message as received to Building Emergency Director or alternate. If not available immediately, relay message to building occupants by dialing 19 on any PAX telephone and making a public address announcement.

5.2.5 Wavering Siren

Meaning: Take Cover

Action: Personnel who are outside shall go inside the nearest building. Personnel who are inside shall stay inside. Emergency instructions will be issued. These instructions may be relayed via a variety of methods, including the WHC "Hot Line" system, the 300 Area crash alarm, various public address systems, the evacuation siren, etc.

5.2.6 Horn (located in EDL-102)

Meaning: Hazardous Condition

Action: The horn is operated by the first person who becomes aware of the hazardous condition. It is most likely to be a chemical spill. Personnel in EDL-102 should evacuate through the nearest exit, proceed to the lobby and notify the Building Emergency Director. The Building Emergency Director will determine appropriate action and will control re-entry into EDL-102.

## 5.3 EMERGENCY ORGANIZATION

### 5.3.1 Description and Responsibilities

The Responsible Level II Manager is the person under whose line of authority or area of responsibility the emergency has occurred. This individual has the overall responsibility and authority for bringing the emergency under control at the event site itself. This Level II Manager reports to the event site (or field control point) to be able to make a first-hand report to the WHC Emergency Director on the progress of bringing the emergency under control.

The Building Emergency Director is the individual who has authority and responsibility in an emergency for the welfare and safety of building personnel. If this building is the event site, the Building Emergency Director has responsibility for directing efforts to terminate and control the event and to manage the field control point. Although extra support and assistance is available to the Building Emergency Director from the Emergency Support Organization (ESO) and the WHC Emergency Director, the Building Emergency Director has the major responsibility in controlling the emergency at the event site until the arrival of the responsible Level II Manager. The Building Emergency Director then assists and advises the Level II Manager during the emergency.

The Building Emergency Director directs the Building Emergency Organization in evaluating the nature and extent of the emergency and implements the appropriate Building Emergency Procedures for the existing condition. The Building Emergency Director is specifically responsible for:

a. Declaring an emergency when alerted to the situation by alarms, telephone notification, etc.

b. Supervising, coordinating and evaluating the combined efforts of the Building Emergency Organization.

c. Notifying the WHC ESO (6-5000) to request assistance and/or recommend notification of outside agencies.

d. Interpreting all emergency data and transmitting any necessary recommendation to the WHC ESO.

e. Obtaining and providing all necessary personnel, instrumentation, materials and equipment.

f. Preparing and maintaining an accurate and complete record of events, decisions and actions in order to maintain continuity and provide review capabilities.

g. Overall accountability of all personnel.

h. Performing duties of Staging Area Supervisor.

i. Assisting other organization, (e.g., Fire Department and Patrol) with control of the emergency.

j. Approving re-entry and/or rescue operations.

The Alternate Building Emergency Director, in the absence of the Building Emergency Director, shall assume the duties of the Building Emergency Director.

5.3.2 Assignments and Alternates

| | Name | Work Phone |
|---|---|---|
| BUILDING EMERGENCY DIRECTOR | WF Brehm | 6-3610 |
| 1st Alternate | ME McMahan | 6-3144 |
| 2nd Alternate | WC Craven | 6-3115 |
| 3rd Alternate | RP Colburn | 6-3716 |

Volunteer Bomb Search Crew

| WHC | PNL |
|---|---|
| WC Craven | JG Carter |
| NH Johnson | KE Eliason |
| HP Maffei | FE Haun |
| SA Irving | SJ Kostorowski |

## 5.4 EVACUATION

### 5.4.1 Response

| Circumstances Requiring Evacuation | Pre-Evacuation Action | Evacuation Route | Assembly Point |
|---|---|---|---|
| Criticality | None | Run through nearest exit | Corner of fence located south and east of the 309 Building |
| Fire | Shutdown equipment if time permits | Leave through nearest exit | Driveway between 324 Building lawn area and the south security fence |
| Evacuate | Shutdown equipment if time permits | Leave through nearest exit | Driveway between 324 Building lawn area and the south security fence |
| Take Cover | None, wait for instructions | If outside, go inside nearest building | Inside nearest building |
| Horn (EDL-102) | Shutdown equipment if time permits | Leave through nearest exit | Lobby |

### 5.4.2 Evacuation Maps

See Figures 5.1, 5.2, 5.3, 5.4 and 5.5.

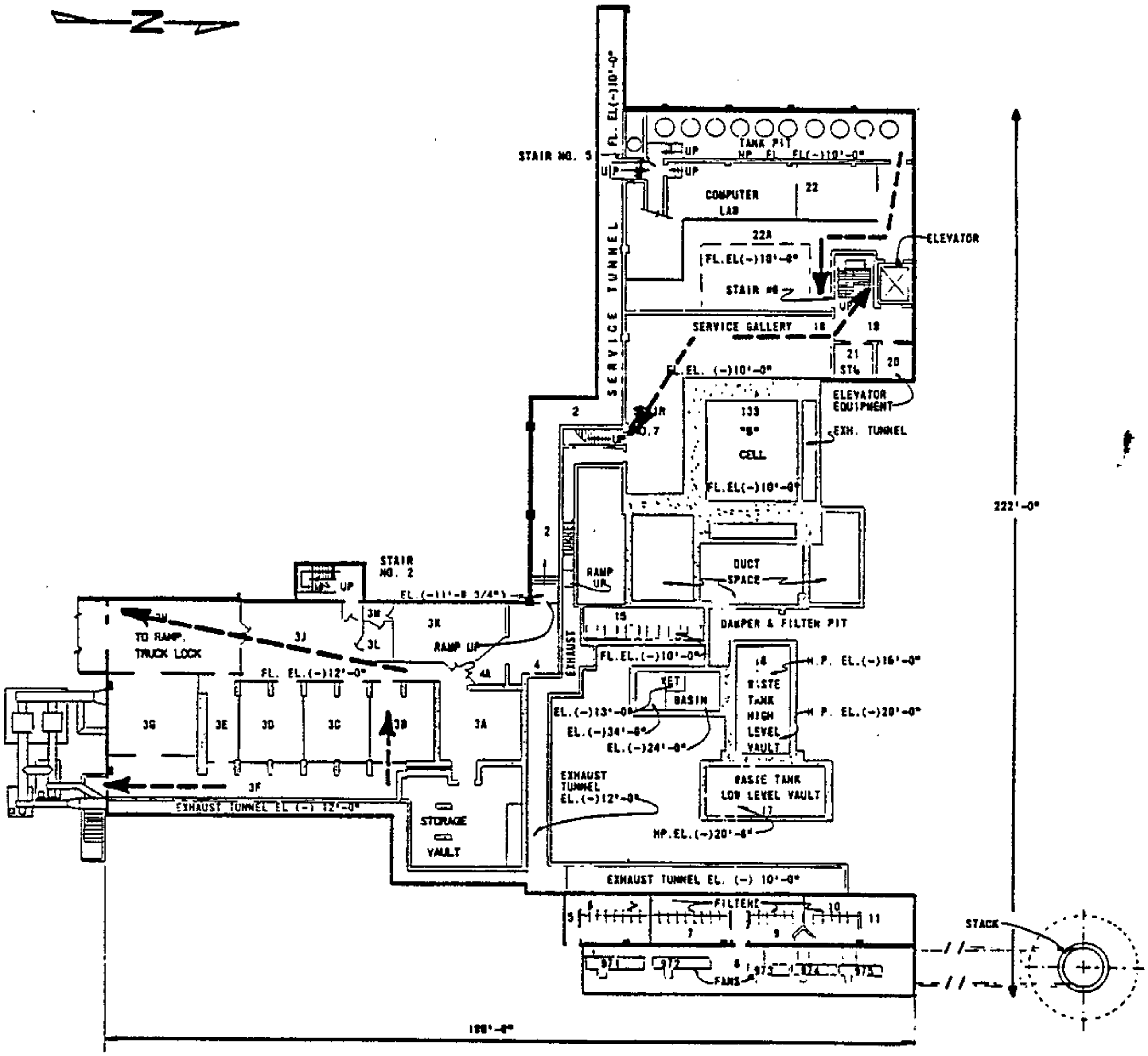


FIGURE 5.1. 324 Building Evacuation Routes, Basement.

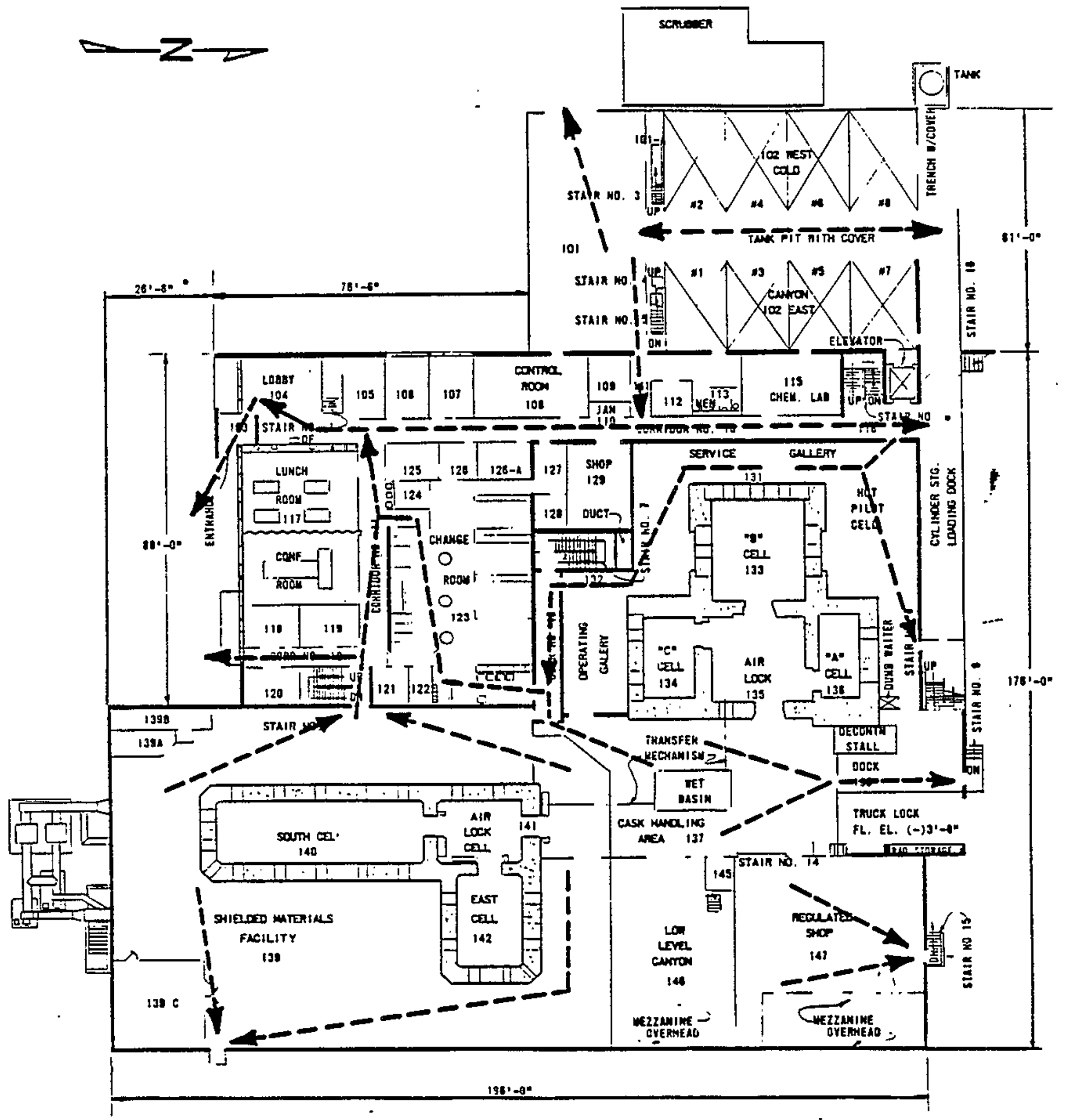


FIGURE 5.2. 324 Building Evacuation Routes, First Floor.

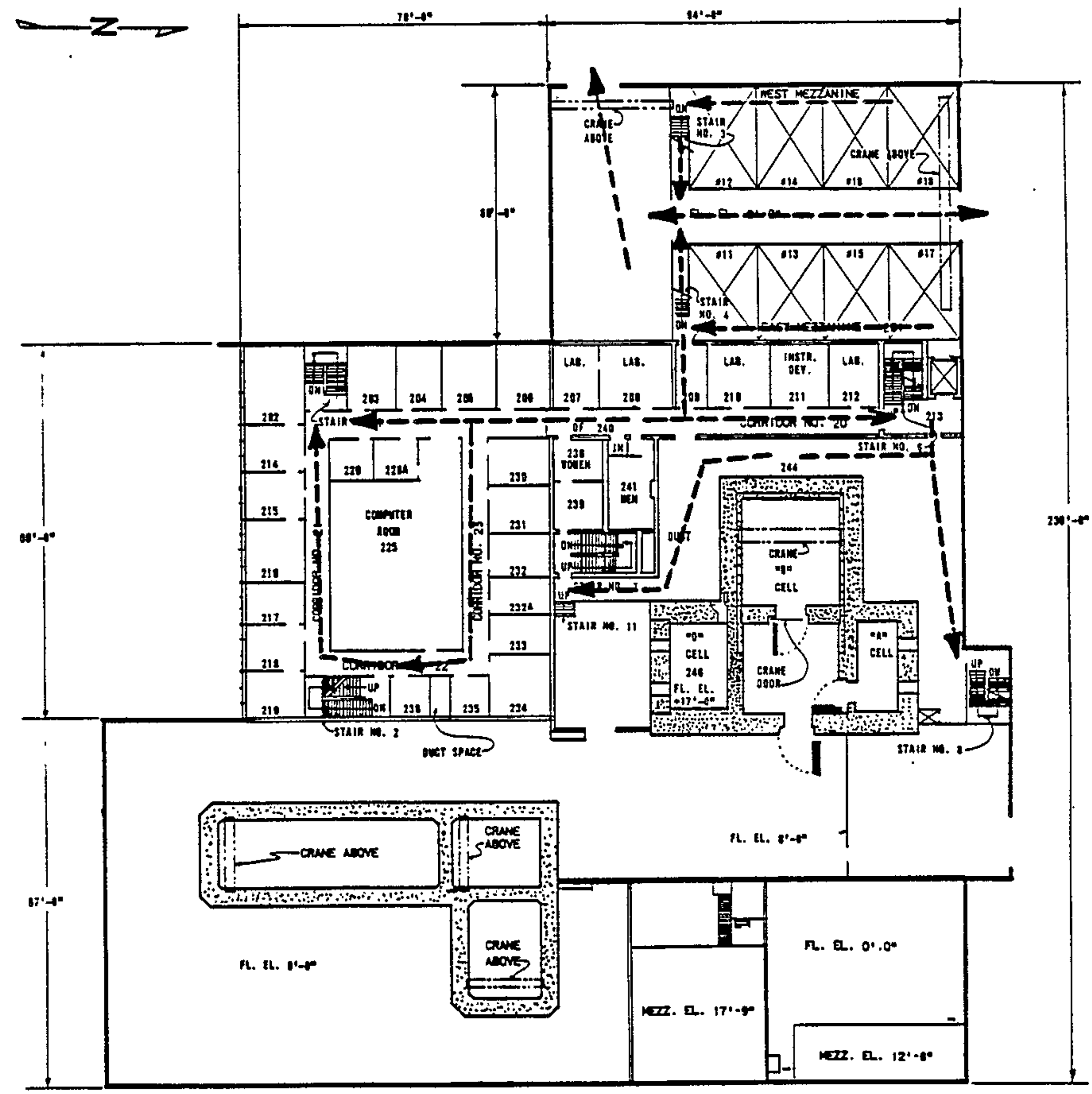


FIGURE 5.3. 324 Building Evacuation Routes, Second Floor.

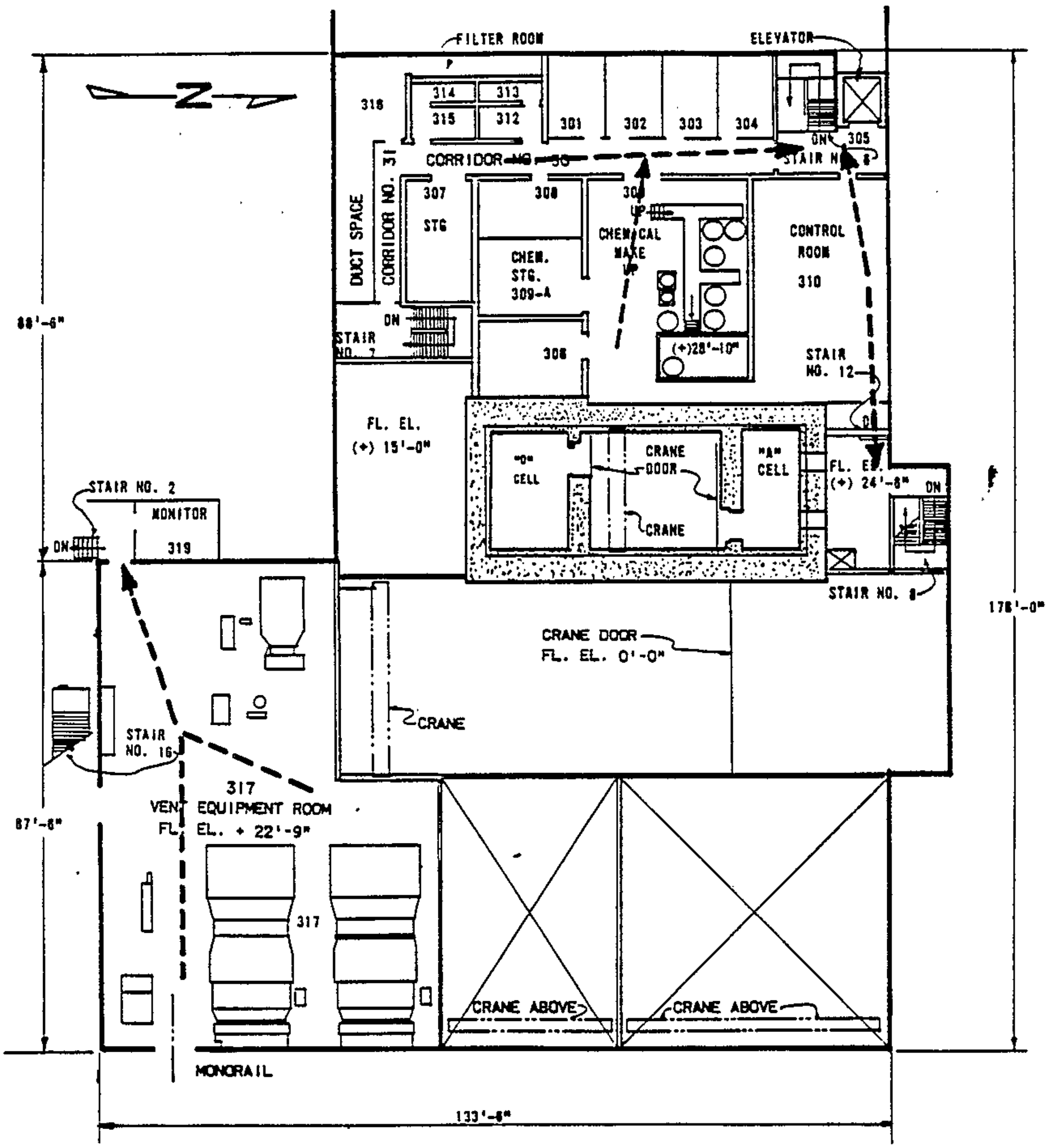


FIGURE 5.4. 324 Building Evacuation Routes, Third Floor.

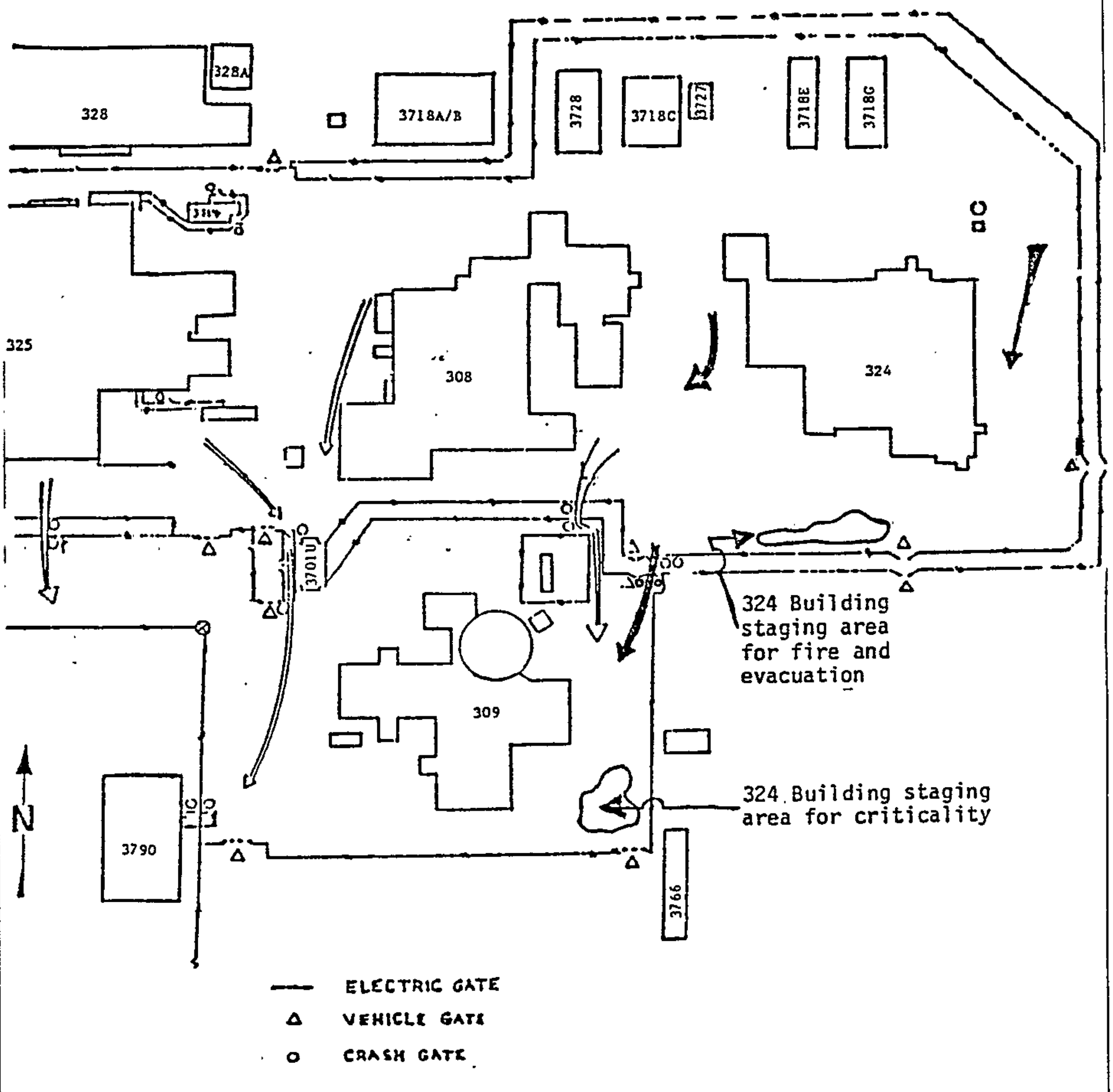


FIGURE 5.5. 324 Building Emergency Evacuation Map.

## 5.5 PERSONNEL ACCOUNTABILITY

### 5.5.1 Plan

The following managers or representatives with personnel assigned to the 324 Building must account for their personnel and report any missing persons to the Building Emergency Director. All managers should appoint alternates to represent them in their absence.

| | |
|---|---|
| WF Bonner (PNL) | ME McMahan |
| WF Brehm | TG Brown |
| DW Engel | PNL Radiation Monitors |
| WD Gaines | Assigned Individuals/WC Craven |
| DE Knowlton (PNL) | |

Visitors are the responsibility of their escorts.

If 324 Building is the event site, report missing persons. Also report as "extras" those persons who have staged in 324 Building staging area but are assigned to another staging area.

If the 324 Building is not the event site, report only "extras" (those persons who have staged in the 324 Building staging area, but are assigned to another staging area). The only exception is if someone from the 324 Building has not reported in and is thought to be at the event site, then that person should be reported as missing.

The Building Emergency Director will report accountability status.

### 5.5.2 Management Responsibility

Individual managers or designated representatives shall be responsible for accounting of all personnel assigned to them. Managers shall report missing personnel to the Building Emergency Director or alternate. All managers should designate alternates to represent them in their absence. It shall be the responsibility of the visitor's escort to account for visitors assigned to him.

## 5.6 SPECIAL SITUATIONS

### 5.6.1 Procedures in the Event of a Power Failure

The 324 Building is provided with a double backup system for emergency electric power. In the event of a failure of BPA power, a diesel generator in the 3621-B Building automatically comes on at once. This is backed up by diesel generators at 3621-D Building. This emergency system will keep exhaust fans operating for Zones 1 and 2 in the building, but not for the office areas. Exit lights and a few emergency lights shall remain in operation, and battery operating emergency lights will come on. All alarms will remain in service, but none will be activated by the power reduction, and the public address system will continue to function.

In the event of a power outage, building personnel should follow one of the two procedures described below, as is appropriate:

Procedure No. 1 If the emergency power is operating, notice will be given at once over the public address system. There will be no need to evacuate the building, although all laboratory and multicurie cell operations should be secured as much as is practical, and all personnel not required in these areas should retire to the lunchroom or office until full power levels are restored.

Procedure No. 2 If all power to the building is cut off, only the battery operated emergency lights will operate. The public address system will not operate. All facilities should be secured, and the building should be evacuated. However, it is not necessary to rush such an evacuation, and prolonged operations may be carried out where necessary by personnel wearing assault masks. Building survey should be completed by Operational Health Physics before personnel return to their laboratory.

Remember, there is no need to panic or to rush to evacuate the building in the case of a power outage. The greatest hazard could be from trying to hurry in dimly lit passages and stairways. Calm attention to procedures described is in order.

5.6.2 Emergency in Another Building

a. Instructions for necessary action will be received over the crash alarm telephone system or by steady siren.

b. Notify building occupants of necessary action and recommend action to be taken by power operators for ventilation control during emergency condition (6-3526).

c. If requested to evacuate, all personnel should report to the 324 Building staging area for accounting. Evacuation siren control is located in lobby and control room.

5.6.3 Evacuation of Disabled Personnel

For evacuation purposes, the term "disability" is defined as any limitation of free movement that would impede the timely evacuation of an individual.

The following considerations are applicable to the evacuation of disabled persons from WHC:

a. Elevators are not to be used in evacuating a building, especially in a fire situation where there is a risk of electrical power failure to the elevator.

b. There are two types of evacuation at WHC. The criticality alarm requires immediate action by running from the building. All other evacuation responses do not require people to run.

c. Since there are a wide range of types of disabilities, a general plan for evacuation of disabled persons is impractical. The plan for evacuation of each disabled individual must be handled on a case-by-case basis.

d. It is the responsibility of the immediate supervisor to provide for the safety of his employes.

Based on the above:

1. Disabled persons should <u>not</u> be assigned to work stations in or near buildings that have potential for a criticality accident.

2. Temporarily disabled persons who normally work in or near buildings with a potential for a criticality accident should be reassigned to a work area without a criticality accident potential until the person has recovered from the disability.

3. It is the individual manager's responsibility to plan for the evacuation of each disabled employe. Among the items the manager should consider in his planning are:

   a. (Re) Assignment of the disabled employe to a ground floor area near an exit.

   b. The use of the "buddy system" whereby another employe(s) aides in evacuating the disabled employe.

   c. A sign-in/out system for the disabled employe to facilitate personnel accountability.

4. A plan for the emergency evacuation of disabled new-hires should be established prior to the employe reporting for work.

5. All plans for evacuating each disabled employe should be reviewed and approved by Industrial Safety and Fire Protection.

5.6.4 Response to Bomb Threats

5.6.4.1 Receivers of Telephoned Threats

A telephone threat might be received by a non-WHC agent, such as DOE, local police, or news agencies. In this case, notification of the threat will be to the WHC ESO by the Patrol Emergency Officer. Should an employe receive a direct telephone threat, however, response as described below may materially increase the probability of safely concluding the incident.

a. Using the check list for threatening phone calls (see next two pages):

   1) Try to remember as soon afterward as possible, write down the exact words of the caller. Pay particular attention to information about the location and detonation time of the bomb.

   2) Try to engage the caller in further conversation for the purpose of making him reveal details of the threat or some clue to his identity. If the caller does not indicate the bomb location or detonation time, ask him. Doubt about the seriousness of the call might be expressed to goad the caller into adding information to "prove" how serious the call is.

   3) Note vocal characteristics of the caller. This includes whether the voice was muffled or clear or that of a male or female or an adolescent or adult; whether the language was educated or unpolished; whether the caller was calm or hysterical; or whether there were unusual or peculiar pronunciations of certain words or syllables or an accent. Note also any background noises which might identify the location of the caller.

b. Immediately notify the WHC ESO at 6-5000.

c. Tell no one else.

(TO BE COMPLETED AFTER CALL)

THREAT RECEIVED:

Date ________ Time Of Call ________ Time Caller Hung Up ________ HEDL Extension Number ________

CALLER'S IDENTITY:

SEX: Male ☐ Female ☐ ADULT ☐ JUVENILE ☐ APPROXIMATE AGE (Years) ____

Did caller seem familiar with building or facility by his description of the bomb location?

YES ☐ NO ☐ Explain ________________________________

________________________________________________

________________________________________________

ORIGIN OF CALL:

Local ☐ Long Distance ☐ Phone Booth ☐ Internal (from within Hanford) ☐

| VOICE CHARACTERISTICS | | SPEECH | | LANAGUAGE | |
|---|---|---|---|---|---|
| ☐ Loud | ☐ Soft | ☐ Fast | ☐ Slow | ☐ Excellent | ☐ Good |
| ☐ High Pitch | ☐ Deep | ☐ Distinct | ☐ Distorted/ Broken | ☐ Fair | ☐ Poor |
| ☐ Raspy | ☐ Pleasant | ☐ Stutter | | ☐ Foul | ☐ ____ (Other) |
| ☐ Intoxicated | ☐ ____ (Other) | ☐ Slurred | ☐ Nasal | ☐ Peculiar Grammar | |
| | | ☐ Normal | ☐ Lisp | ☐ Use of certain words or phrases | |
| | | ☐ Disguised | ☐ ____ (Other) | | |

| ACCENT | | MANNER | | BACKGROUND NOISES | |
|---|---|---|---|---|---|
| ☐ Local | ☐ Not Local | ☐ Calm | ☐ Angry | ☐ Office Machines | ☐ Bedlam |
| ☐ Foreign | ☐ Regional | ☐ Rational | ☐ Irrational | ☐ Factory Machines | ☐ Airplanes |
| ☐ Race | ☐ ____ (Other) | ☐ Coherent | ☐ Incoherent | ☐ Street Traffic | ☐ Trains |
| | | ☐ Deliberate | ☐ Emotional | ☐ Animals | ☐ Voices |
| | | ☐ Sincere | ☐ Laughing | ☐ Quiet | ☐ Music |
| Explain: | | ☐ Confident | ☐ Nervous | ☐ Mixed | ☐ Party Atmosphere |
| | | | ☐ ____ (Other) | ☐ ____ (Other) | |

NAME OF PERSON RECEIVING CALL: ________________________

BUILDING: ________________________ ROOM: ____________

TELEPHONE EXTENSION NUMBER: ________________________

FIGURE 5.6. Checklist for Threatening Telephone Calls.

CHECK LIST

THREATENING TELEPHONE CALLS

INSTRUCTIONS:

1. Be calm. Be courteous. Listen, do not interrupt the caller.
2. Keep caller on line, ask him/her to repeat message. Pretend difficulty with hearing.
3. Record message and information below.

EXACT MESSAGE:

4. Keep caller talking. If bomb or explosive is indicated and caller seems agreeable to further conversation, ask questions like:

WHEN WILL IT GO OFF?

WHERE IS IT LOCATED?

Inform caller that building is full of people and a bomb could result in death or injury to innocent people.

WHAT DOES IT LOOK LIKE?

WHAT KIND IS IT?

WHY WAS IT PLACED?

HOW DO YOU KNOW SO MUCH ABOUT IT?

WHO PUT IT THERE?

WHERE ARE YOU CALLING FROM?

WHAT IS YOUR NAME AND ADDRESS?

5. After the conversation has ended, IMMEDIATELY call the HEDL Emergency Support Organization (6-5000).
6. Complete the reverse side of this check list as completely as you can.
7. Stand by for follow-up instructions.

Figure 5.7. Checklist for Threatening Telephone Calls.

5.6.4.2 Receivers of Written Threats

a. Handle the letter as little as possible to preserve fingerprints and avoid smudging.

b. Record all details of the receipt (i.e., where found, how delivered, when found, etc.).

c. Immediately notify the WHC ESO at 6-5000.

d. Tell no one else.

e. Release the letter only to WHC Security personnel or to a person authorized by WHC Security.

5.6.4.3 Discoverer of Bomb or Suspicious Object

a. Clear the immediate area of personnel.

b. Take whatever steps are necessary to assure that the object is not moved, opened, or otherwise disturbed. If practicable, post warning signs, place barricades, or stand guard in a sheltered location and at maximum possible distance.

c. IMMEDIATELY NOTIFY THE WHC ESO AT 6-5000.

5.6.4.4 Building Emergency Director

The evacuation that is ordered by the WHC Emergency Director, alternate, or the WHC ESO may be "immediate" or "systematic" as described in these procedures. Basically, the "immediate" evacuation procedure is the same as that when the steady siren is activated, while the "systematic" evacuation requires a brief search by all employes of their work area.

Initiate evacuation and/or a search when directed by the WHC Emergency Director or alternate.

a. Immediate Evacuation Procedure

1. Activate evacuation siren for building

2. Follow the usual evacuation procedure

b. Systematic Evacuation Procedure

1. Notify building occupants via P.A. system of the bomb threat and of the proper evacuation procedures to follow.

2. Initiate evacuation procedures (refer to 5.6.4.5b).

3. Secure all nonvital utilities. Do not secure vital utilities. Call 6-5000 if there are any questions.

c. Initiate the Search

1. Assemble the designated volunteer bomb search crew which includes persons familiar with the area to be searched.

2. Await search coordination instructions from the WHC Bomb Search Team.

3. Begin the search where the device was indicated to be. If no such information is given or if no device is found, the search pattern should be from the outside in, bottom up.

5.6.4.5 Actions to be Taken by the Building Occupants

a. Immediate Evacuation Procedure (steady siren blast for 3 to 5 minutes)

1. Proceed to your designated staging area via exit routes designated in the building emergency procedures.

2. Follow instructions of the Building Emergency Director for accountability procedures.

3. Follow any additional instructions given over the area P.A. system.

4. Do not leave the staging area until so instructed.

b. Systematic Evacuation Procedure

1. Follow all instructions given over the P.A. system.

2. Terminate work in progress to a safe status. Shut down any equipment which might be damaged if left unattended.

3. Unplug all office machines, coffee pots, fans, window air conditioners, and leave office windows and doors open.

4. Make a brief search of your immediate work area for any suspicious object. Note the location and appearance but DO NOT TOUCH OR DISTURB ANY SUSPICIOUS OBJECT. Leave desk drawers open to signal that they have been searched.

5. If you are in a radiation zone, perform the normal exit procedures.

6. Keeping in mind that you may not be returning until the next workday, evacuate the building, taking along your personal belongings such as briefcases, purses, thermoses, and lunch pails, and reassemble at your designated staging area.

7. Report any suspicious objects you may have found to the Building Emergency Director.

8. Follow the instructions of the Building Emergency Director for accountability procedures.

9. Follow any additional instructions given over the area P.A. system.

10. DO NOT leave the staging area until so instructed.

## 5.7 TRAINING AND TESTING

### 5.7.1 Orientation and Review

Upon assignment to the 324 Building, each employe shall be instructed by their supervisor in the requirements of the Building Emergency Procedure. Every six months, all building occupants shall be required to review these procedures. The review should include listening to the standard emergency signals (telephone 6-3333). Each manager will inform the Building Administrator in writing when the orientation and the review have been completed. The Building Emergency Director shall ensure that the orientation and training are provided and documented for all normally assigned building occupants, including non-WHC employes. Such documentation must include as a minimum the names of each person assigned to the building, the date of assignment to the building, and the dates for the individual's Building Emergency Procedure training.

## 5.7.2 Tests and Drills

Emergency exercises utilizing an in-building emergency scenario shall be conducted at least annually for each WHC Nuclear and Nuclear Reactor Facility. The Building Emergency Director shall conduct these exercises to test compliance with emergency procedures and familiarize the Building Emergency Organization with the procedures. These exercises shall also be critiqued by the Building Emergency Director and Building Emergency Organization to identify and correct potentially weak areas. The exercises should be planned to test the response to a variety of applicable situations and signals. The fire alarm and the evacuation alarm shall be used in alternate years so that both signals and responses have been tested at least once in a three year period. Criticality alarms shall not be used for exercise purposes, however, criticality exercises shall be conducted utilizing the evacuation signal. The details for this type of exercise would be incorporated into the emergency scenario. The exercise shall be fully documented with a scenario and a critique, and the Building Administrator shall retain a copy of this documentation.

DOE-RL must approve all emergency test exercises simulating special situations such as criticality, threats or acts of violence, nuclear excursion, sabotage, or natural disaster with the exception of routine fire or evacuation drills. In order to comply with this requirement, Safety Training must be notified of each test exercise at least two weeks prior to the planned exercise date. Safety Training will in turn complete the required forms for submittal to DOE-RL for approval at least one week before the exercise. Routine fire or evacuation drills are exempted from this procedural requirement.

The minimum data required are:

- Date and time of exercise
- Type of exercise
- Purpose of exercise
- Assumed conditions of the incident and method of initiation.

In addition, a written critique of major exercises in which the WHC Emergency Control Center is activated shall be provided to DOE-RL within 30 days of the exercise.

## 5.8 TERMINATION OF EMERGENCY

Normally, it is the responsibility of the Building Emergency Director to declare the termination of an emergency; however, once the WHC Emergency Staff is activated, only the WHC Emergency Director shall declare an emergency as ended. If the RL Emergency Director is notified, only he shall officially terminate the emergency. In all cases, however, the Building Emergency Director must be consulted before reentry is initiated.

APPENDIX G-2

MEMORANDA OF UNDERSTANDING

MEMORANDUM OF UNDERSTANDING
BETWEEN STATE OF WASHINGTON
AND
DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
EMERGENCY PREPAREDNESS AND RESPONSE

## I. BACKGROUND AND PURPOSE

This memorandum of understanding establishes a framework of cooperation between the State of Washington and the Department of Energy, Richland Operations Office, in the planning for and response to emergencies at the Hanford Site which might have offsite consequences.

## II. RESPONSIBILITIES

The Department of Energy's Richland Operations Office (RL) is responsible for responding to all emergencies contained within the federally operated facilities located within the Hanford Site boundaries. In the event that a Hanford emergency has offsite public health implications, RL and the State will coordinate implementation of their emergency plans.

RL will provide support and assistance to the State of Washington in the preparation, implementation and recovery phases of emergency responses affecting the offsite environment by:

- Coordinating the activities of Federal agencies which are parties to the Federal Radiological Monitoring and Assessment Plan (FRMAP).
- Assisting in radiological monitoring and decontamination; radiation exposure evaluation and radiation health hazards assessment.
- Providing medical advice on emergency treatment of persons exposed to radiation and technical advice on radioactive contamination.
- Cooperating with appropriate officials in the development of the State plan for coping with emergencies occurring on the Hanford Site.

## III. OFF NORMAL EVENTS, EMERGENCY ACTION LEVELS AND RESPONSE ACTIONS

Off Normal Event - A non-emergency event of general public interest. RL will inform the Department of Social and Health Services (DSHS) Radiation Control Section of such events before the close of the next working date of the event or prior to its issuance of a news release, whichever comes first.

Four classes of emergency action levels will be utilized. These classes are: (1) unusual event, (2) alert, (3) site area emergency, and (4) general emergency. The description of these classes and RL's interpretation as applicable to the Hanford Site, along with the expected response actions of RL and the State relative to each class, are as follows:

1. Unusual Event

This class is described as an unusual event in progress or having occurred which indicates a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of the safety system occurs.

> <u>The event involves conditions with little or no potential for offsite release of radioactive material. Events which fall into this category may include a significant unusual occurrence or other event with potential for public interest.</u>

The purpose of notification to the State is to assure that the first step in any response later found to be necessary has been carried out and to provide current information on unusual events.

RL will inform the State of the nature of the unusual condition and close out with verbal summary within 24 hours or escalate the event to a more severe class.

2. <u>Alert</u>

This class is described as an event in progress or having occurred which involves an actual or potential substantial degradation of the level of safety of the plant.

> <u>This event involves conditions where limited releases of radioactivity might occur which could produce a whole body dose rate at the site boundary equal to or greater than .5 mR/hr, but not greater than 50 mR/hr.</u>

The purpose of the alert to the State is to assure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring, if required, and provide current status information.

RL will:

- Inform the State of alert status and reason for the alert.
- Activate its emergency control center and press center.
- Dispatch onsite monitoring teams and associated communications.
- Provide continual status updates to the State, at least at 15-minute intervals.
- Provide periodic meteorological assessments to the State, and if any releases are occurring, dose assessments for actual releases.
- Activate Unified Dose Assessment Center, perform offsite monitoring and evaluation, and provide information to the State, until the State monitoring team is activated and operating.
- Close out by verbal summary within 8 hours or escalate to a more severe class.

When notified by RL, the State will:

- Activate its emergency operations center.
- Alert to standby status key emergency personnel including monitoring teams.
- Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections, as necessary.
- Maintain alert status until verbal closeout or the event is escalated to a more severe class.

3. Site Area Emergency

This class is described as an event in progress or having occurred which involves actual or likely major failures of plant functions needed for protection of the public:

Such an event involves conditions where significant releases of radioactivity are likely or are occurring which could result in a whole body exposure rate at the site boundary equal to or greater than 50 mR/hr. The projected dose at the site boundary must not exceed a 1 rem whole body dose or the event will qualify as a General Emergency.

A Site Area Emergency may be declared as a result of either of the following:

1. If it is obvious from the start that the event is going to have the defined impacts, or
2. As information on the event becomes more definitive, it becomes obvious the event is going to develop into the defined impact.

In either case, emergency radiation monitoring teams would be requested.

4. General Emergency

This class is described as an event in progress or having occurred which involves actual or imminent substantial degradation of plant safety systems.

The event involves actual or imminent significant release of radioactive material to the offsite environment which could result in a dose equal to or exceeding 1 rem whole body or 5 rem thyroid. If, during or at the beginning of an event, there is imminent danger to the public a General Emergency would be identified and immediate notifications would be made requesting immediate response actions.

The purpose of the Site Area and General Emergency notifications to the State is (1) initiate predetermined protection actions for the public, (2) provide continuous assessment of information from RL and offsite measurements, (3) initiate additional measures as indicated by event release or potential release, and (4) provide current information for consultation with the State and the public.

For both a Site Area and General Emergency, RL will:

- Notify the State of the emergency status and reason for the emergency.
- Activate its emergency control center and press center.
- Dispatch onsite and offsite monitoring teams and associated communications.
- Provide plant status updates at least at 15-minute intervals to the State.
- Dispatch a management representative to the Washington State Emergency Operations Center.
- Provide technical and management consultation with the State as required.
- Provide meteorological and dose assessments to the State via the Unified Dose Assessment Center.
- Close out by verbal summary within eight hours, or, if site area emergency needs to be escalated to general emergency so advise.

When notified by RL, the State will:

- Provide immediate public notification on emergency status and provide public updates.
- Activate its emergency operations center.
- Dispatch key emergency personnel including monitoring teams.
- Provide offsite monitoring results to RL through the Unified Dose Assessment Center.
- Continuously assess information obtained from this Center and the offsite monitoring teams with regard to changes to protective actions already initiated for public mobilizing evacuation resources or sheltering.
- Provide Public Information Officer at the RL Press Center.
- Maintain emergency status until closeout or reduction of emergency class.

IV. AREAS OF COOPERATION

A. Notification

1. The Department of Social and Health Services will be notified of off normal events.

2. The Department of Emergency Management will be the single point of contact for notification to the State regarding emergencies. Notification will be provided to the State within fifteen minutes after classification of the emergency, and will be based upon the emergency action levels described above.

Authentication of the notification call to the State will be effected by a return call to RL.

B. Radiation Control and Meteorology Data

RL will conduct evaluations of radiation hazards through direct and field radiation readings within the Hanford Site and will perform offsite monitoring and evaluation until the State monitoring team is activated and operating. RL will provide radios for the State monitoring teams.

The State will provide or arrange for needed radiation monitoring outside the Hanford Site to conduct evaluations of radiation hazards through direct and field radiation readings, and to determine contamination levels of environmental samples as appropriate.

Communications and liaison of dose assessments and current status on meteorological and radiological conditions will be accomplished through a Unified Dose Assessment Center located in the Federal Building, Richland, Washington. The State will send a representative to this Center. The radiation data and monitoring activities of the offsite agencies present during an emergency will be coordinated with the State.

C. Recovery Period

RL will provide assistance to minimize radiation health hazards, decontamination problems, etc., to the State which serves as the lead agency supporting local governments during post-accident periods.

D. Training and Exercises

RL and State should conduct an annual emergency response exercise designed to assess emergency response capabilities and provide needed training. Cooperative arrangements for such exercises and training must be agreed to in advance.

E. Public Affairs

At the request of the State, RL will assist the State in its development of educational materials concerning radiation and its hazards and information regarding appropriate actions to be taken by the general public in the event of an accident involving radioactive materials.

F. Ingestion Pathway

The State, with support from RL, will implement protective measures for the 20-mile ingestion exposure pathway emergency planning zone around the Hanford Site.

G. Reentry

The State, with support from RL, will continually assess the emergency situation. They will determine the extension of or when the relaxation of protective measures should begin.

H. Emergency Public Information

During an emergency, preliminary media releases from RL and from the State will be coordinated. For a Site Area or General Emergency, RL will activate the joint Hanford Emergency Press Center, and the State and RL spokepersons will jointly prepare and release information statements from that location.

V. TERM OF AGREEMENT

This agreement will become effective upon signature and continue until cancelled by either party by written notice to the other. Amendments or modification to this Agreement may be made upon written agreement by both parties to the Agreement.

APPROVED FOR STATE OF WASHINGTON:

Governor Booth Gardner                    Date

APPROVED FOR THE DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE:

Michael J. Lawrence                    Date
Manager

MEMORANDUM OF UNDERSTANDING
BETWEEN
BENTON COUNTY, WASHINGTON
AND
FRANKLIN COUNTY, WASHINGTON
AND
DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
EMERGENCY PREPAREDNESS AND RESPONSE

## I. BACKGROUND AND PURPOSE

This memorandum of understanding reaffirms the established framework of cooperation among Benton County and Franklin County located in the State of Washington and the Department of Energy, Richland Operations Office, in the planning for and response to emergencies at the Hanford Site which might have offsite consequences.

## II. RESPONSIBILITIES

The Department of Energy's Richland Operations Office (RL) is responsible for responding to all emergencies contained within the federally operated facilities located within the Hanford Site boundaries. In the event that a Hanford emergency has offsite public health implications, RL and the Counties will coordinate implementation of their emergency plans. RL will provide support and assistance to the Counties in the preparation and implementation of emergency responses affecting the offsite environment by:

- Coordinating the activities of Federal agencies which are parties to the Federal Radiological Monitoring and Assessment Plan (FRMAP).
- Assisting in radiological monitoring and decontamination, radiation exposure evaluation, and radiation health hazards assessment.
- Providing medical advice on emergency treatment of persons exposed to radiation and technical advice on radioactive contamination.
- Coordinating with appropriate officials in the development of the Counties' plan for coping with radiological incidents occurring on the Hanford Site.

## III. EMERGENCY ACTION LEVELS AND RESPONSE ACTIONS

Four classes of emergency action levels will be utilized. These classes are: (1) unusual event (2) emergency alert, (3) site area emergency, and (4) general emergency. The description of these classes and RL's interpretation as applicable to the Hanford Site, along with the expected response actions of RL and the Counties relative to each class, are as follows:

1. Unusual Event

   This class is described as an unusual event in process or having occurred which indicates a potential reduction of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further reduction of the safety system occurs.

   The event involves conditions with little or no potential for offsite release of radioactive material. Events which fall into this category may include a significant unusual occurrence or other event with potential for public interest.

   The purpose of the notification by RL to the Counties is to assure that the first step in any response later found to be necessary has been carried out and to provide current information on unusual events. RL will inform Benton County promptly of the nature of the unusual condition and close out with verbal summary within 24 hours after conclusion of event or escalate the event to a more severe class. Benton County will notify Franklin County.

2. Alert

   This class is described as an event in process or having occurred which involves an actual or potential substantial reduction of the level of safety of the plant.

   This event involves conditions where limited releases of radioactivity might occur which could produce a whole body dose rate at the site boundary equal to or greater than .5 mR/hr., but not greater than 50 mR/hr.

   The purpose of the notification of the alert by RL to the Counties is to assure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring, if required, and provide current status information.

   RL will:

   - Promptly inform the Benton County Emergency Dispatch Center of the emergency alert status.

   - Activate its emergency control center and press center.

- Dispatch onsite monitoring teams and their associated communications.

- Provide continual status updates to the Benton and Franklin Counties Emergency Operations Center (EOC), at least every 15 minutes.

- Provide periodic meteorological assessments to the Benton and Franklin Counties EOC, and, if any releases are occurring, dose estimates for actual releases.

- Activate the Unified Dose Assessment Center, perform offsite monitoring and evaluation, and provide information to the Benton and Franklin Counties EOC until the State of Washington monitoring team is activated, operating, and assumes responsibility.

- Close out by verbal summary within eight hours after conclusion of event or, if appropriate, escalate to a more severe class.

When notified by RL, Benton County will:

- Notify the Franklin County Emergency Dispatch Center.

- Activate its emergency operations center.

- Provide liaison between RL and Franklin County in coordinating the required actions by Franklin County.

- Alert to standby status key emergency personnel.

- Maintain alert status until verbal closeout or the event is escalated to a more severe class.

When notified by the Benton County Emergency Dispatch Center, Franklin County will:

- Coordinate necessary actions with Benton County.

- Alert to standby status key emergency personnel.

- Maintain alert status until verbal closeout or the event is escalated to a more severe class.

3. Site Area Emergency

This class is described as an event in process or having occurred which involves actual or likely major failures of plant functions needed for protection of the public.

Such an event involves conditions where significant releases of radioactivity are likely or are occurring which could result in a whole body exposure rate at the site boundary equal to or greater than 50 mR/hr. The projected dose at the site boundary must not exceed a 1 rem whole body dose or the event will qualify as a General Emergency.

A Site Area Emergency may be declared as a result of either of the following:

1. If it is obvious from the start that the event is going to be a Site Emergency.

2. As information on the event becomes clearer, it becomes obvious the event is going to develop into a Site Area Emergency.

4. General Emergency

This class is described as an event in process or having occurred which involves actual or imminent substantial reduction of plant safety systems.

The event involves actual or imminent significant release of radioactive material to the offsite environment which could result in a dose equal to or exceeding 1 rem whole body or 5 rem thyroid. If, during or at the beginning of an event, there is imminent danger to the public, a General Emergency would be identified and immediate notifications would be made requesting immediate response actions.

The purpose of the Site Area and General Emergency notification by RL to the Counties is to (1) initiate predetermined protective actions for the public, (2) provide continuous assessment of information from RL and offsite measurements, (3) initiate additional measures as indicated by event release or potential release, and (4) provide current information for consultation with the Counties and the public.

For both a Site Area and General Emergency, RL will:

- Promptly notify the Benton County Emergency Dispatch Center of the emergency status and the reason for the emergency.
- Activate its emergency control center and press center.
- Dispatch onsite and offsite monitoring teams and their associated communications.

- Provide plant status updates at least every 15 minutes to the Benton and Franklin Counties EOC.

- Provide periodic press briefings.

- Provide technical and management consultation to the Benton and Franklin Counties EOC as required.

- Provide meteorological and dose estimates to the Benton and Franklin Counties EOC.

- Close out by verbal summary within eight hours after conclusion of event, or, if the site area emergency needs to be escalated to general emergency, so advise.

When notified by RL, Benton County will:

- Notify the Franklin County Emergency Dispatch Center.

- Provide liaison between RL and Franklin County for Franklin County's required actions.

- Provide immediate public notification about the emergency status and provide public updates.

- Activate its emergency operations center.

- Dispatch key emergency personnel.

- Continuously assess information obtained from RL, with regard to changes to the protective actions already initiated for public evacuation and/or sheltering.

- Provide a Public Information Officer at the Hanford Emergency Press Center.

- Maintain emergency status until closeout or reduction of emergency class.

When notified by the Benton County Emergency Dispatch Center, Franklin County will:

- Provide immediate public notification of the emergency status and provide public updates.

- Establish a joint Emergency Operations Center with Benton County.

- Dispatch key personnel.

- Maintain emergency status until closeout or reduction of emergency class.

## IV. AREAS OF COOPERATION

- Notification

  The Benton County Emergency Dispatch Center will be the single point of contact for notification to Benton and Franklin Counties. Notification will be based upon the emergency action levels described above. Authentication of the notification call to the Counties will be effected by a return call to RL.

- Radiation Control and Meteorology Data

  Communications and liaison of dose assessments and current status about meteorological and radiological conditions will be accomplished through the RL Emergency Control Center. This information will be provided to the Benton and Franklin Counties EOC via the Unified Dose Assessment Center.

- Recovery Period

  RL will provide assistance during post-accident periods to minimize radiation health hazards and decontamination problems to the State's Washington Fixed Nuclear Facility Reentry and Recovery Task Force, of which the counties are a member.

- Training and Exercises

  RL and the Counties will conduct an annual emergency response exercise designed to assess emergency response capabilities and provide needed training. Cooperative arrangements for such exercises and training will be agreed to in advance.

- Public Affairs

  At the request of the Counties, RL will assist the Counties in the development of educational materials concerning radiation and its hazards and information regarding appropriate actions to be taken by the general public in the event of an accident involving radioactive materials.

- Warning to the Public

  The Counties, with support from RL, will implement protective measures for the emergency planning zone around the Hanford Site.

- Emergency Public Information

  During an emergency, preliminary media releases from RL and from the Counties will be coordinated. For a Site Area or General Emergency, RL will activate the joint Hanford Emergency Press Center, and the Counties and RL spokespersons will jointly prepare and release information statements from that location.

V. TERMS OF AGREEMENT

This agreement will become effective upon signature and continue until cancelled by either party by written notice to the other. Amendments or modification to this Agreement may be made upon written agreement by both parties to the Agreement.

APPROVED FOR BENTON COUNTY, STATE OF WASHINGTON:

Ro[illegible] 10-1-84
Date

APPROVED AS TO FORM:

9-26-84
Deputy Prosecuting Attorney Date

APPROVED FOR FRANKLIN COUNTY, STATE OF WASHINGTON:

Ken Miller 10-11-84
Date

APPROVED FOR THE DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE:

Michael J. Lawrence 8/27/84
Michael J. Lawrence, Manager Date

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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

April 7, 1982

Mr. Don Goodwin, Chairman
Board of County Commissioners
Grant County Courthouse
Ephrata, Washington 98823

Dear Mr. Goodwin:

RADIOLOGICAL EMERGENCY PLANNING AND RESPONSE

The purpose of this letter is to establish a framework of cooperation between the Department of Energy, Richland Operations Office (RL), and Grant County, in the planning for and response to emergencies at the Hanford Site which might have consequences in Grant County.

RL is responsible for responding to all emergencies contained within the federally operated facilities located within the Hanford Site boundary. Accident analyses conducted at Hanford indicate that we do not have an accident potential that would require anything more than a notification to the residents living in Grant County within ten miles of the Department of Energy's N Reactor. We do not anticipate an accident that would require evacuation. However, in the unlikely event of a Hanford emergency that would have health implications in Grant County, we would like to formalize a response plan with you.

The plume exposure pathway emergency planning zone for N Reactor is 4.5 miles which does not extend beyond the Hanford Site. In order to be compatible with other public utilities at Hanford, we are adopting a contingency planning zone within ten miles of the N Reactor which does extend into Grant County.

RL will provide support and assistance to Grant County in the preparation and implementation of emergency response affecting Grant County by coordinating the activities of federal agencies which are parties to the Federal Radiological Assistance Response and Monitoring Program; assisting in radiological monitoring and decontamination, radiation exposure evaluation, and radiation health hazards assessment; providing medical advice on emergency treatment of persons exposed to radiation and technical advice on radioactive contamination, including protective response recommendations; and coordinating with your Department of Emergency Services in the development of plans for coping with radiological incidents occurring on the Hanford Site.

Four classes of emergency action levels have been adopted: Unusual Event, Alert, Site Emergency, and General Emergency. It is expected that we would provide notification only to you for the unusual event and alert categories, and would provide protective response recommendations, if appropriate, for the site and general emergency categories.

For a site or general emergency category, we are prepared to send a representative to the Grant County Emergency Operations Center for advice and consultation. We would provide information to you as it develops for your public notification and appropriate protective response measures.

To assist in the notification to the residents living within the contingency planning zone of the N Reactor, RL will provide tone activated radios which may be used in conjunction with your activation of the emergency broadcast system. We will rely upon the Grant County Sheriff's Department to provide any required evacuation and law enforcement control for the residents of Grant County.

RL will conduct an annual emergency response exercise designed to assess emergency response capabilities and provide needed training. Cooperative arrangements for such exercises and training will be agreed to in advance.

RL will assist in the development of educational materials concerning radiation and its hazards and information regarding appropriate actions to be taken by the residents of Grant County within the contingency emergency planning zone in the event of an emergency involving radioactive materials.

RL will be responsible for preparing an initial press release. The press release will be coordinated with Grant County before issuance to the media unless circumstances make this an impossibility. Grant County is invited to send a media liaison to the Hanford Press Center in Richland for issuances of releases and press briefings. It is expected that all subsequent releases of information will be coordinated between RL and Grant County.

If these arrangements meet with your approval, I would appreciate your signing and returning one copy of this letter.

We look forward to our continued good working relationships with your Department of Emergency Services.

Very truly yours,

Jack L. Rhoades, Assistant Manager
for Safety, Security and Quality
Assurance

SQA:PHT

APPROVED: Don Goodwin
Don Goodwin, Chairman
Board of County Commissioners
Grant County

MEMORANDUM OF UNDERSTANDING

BETWEEN

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

AND

DEPARTMENT OF ENERGY

RICHLAND OPERATIONS OFFICE

EMERGENCY PREPAREDNESS AND RESPONSE

I. BACKGOUND AND PURPOSE

This memorandum of understanding reaffirms the established framework of cooperation between the Washington Public Power Supply System (Supply System) and the Department of Energy, Richland Operations Office (RL), in the planning for and response to emergencies at the Hanford Site.

II. RESPONSIBILITIES

RL is responsible for direction and overview for all emergency response actions required within the Hanford Site, excluding the nonfederally operated facilities. RL will provide required assistance to the Supply System from the Supply System site boundary to the Hanford Site boundary.

III. AREAS OF COOPERATION

Notification - Both parties are responsible for providing prompt notification to the other in the event of an emergency impacting the other's facilities or operations.

Because of the proximity of the Fast Flux Test Facility, and associated facilities in the 400 Area, special arrangements concerning notification are established. This notification will be necessary in the event of a potential event which could affect the other facility and should include recommendations for protective measures. Each facility shall maintain provisions in their respective emergency procedures to ensure direct and timely notification of the adjacent facility.

Traffic Control - RL will provide control of the Hanford Site highway and rail traffic in the event of a major emergency at the Supply System. Traffic control will be initiated through notification to the Hanford Patrol Emergency Office (PEO).

Communications Equipment - The Supply System will use existing RL communications systems through the PEO contact for emergency communications between the Supply System and DOE. The Supply System will continue to provide emergency communications capability in the form of shortwave radio and telephone links between the PEO, county offices, Supply System facilities for coordination of emergency response activities outside of the Supply System site. Use of the PEO contact by the Supply System will be limited to activities associated with emergency preparedness.

The Supply System has installed and will continue to maintain a tone-controlled transceiver in the PEO, Federal Building, at no expense to the U. S. Government, to be operated on the same frequency as the other radios designated for the Supply System emergency system. This radio can be utilized by either party for notification purposes. RL, through the PEO, will participate in periodic testing, as necessary, to assure operation of the transceiver and meet any regulatory requirement for this function.

Emergency Decontamination Center - The Supply System will continue to include the Emergency Decontamination Center (EDC) as a resource for its emergency planning effort. RL will be reimbursed on a full cost recovery basis for use of the EDC.

Emergency Facilities and Equipment - Mutual assistance, as needed, will be provided in the use of facilities and equipment for personnel decontamination, first aid, evacuation reassembly areas, respiratory protective equipment, protective clothing, vehicles, including ambulances, survey instruments, and resources for river evacuation.

Radiation Control and Meteorology Data - In addition to the provisions contained within the Federal Assistance Radiological Program Agreement among RL, the Supply System, and the State of Washington, environmental and meteorology data, and radiological release evaluation data will be exchanged. Field monitoring teams, dose assessment assistance and aerial monitoring will be provided as needed. If the emergency is in an RL facility or outside the Supply System fence boundary, RL will have primary dose assessment and associated protective measure responsibility. If the emergency originates at the Supply System, the Supply System will have primary responsibility for the dose assessment and associated protective measure responsibilities. In either case, each respective party will provide a liaison representative at the primary assessment center.

Training and Exercises - Cooperative arrangements for exercises and training will be agreed to in advance.

Public Information - In cooperation with the Counties, RL and the Supply System will jointly assist the Counties in the development of educational materials concerning radiation and its hazards and information regarding appropriate actions to be taken by the general public in the event of an accident involving radioactive materials.

Media - If the emergency originates on the Hanford Site, outside the Supply System site boundary, RL will have primary media responsibility. If the emergency originates at the Supply System, the Supply System will have the primary media responsibility.

VI. TERMS OF AGREEMENT

The specific areas of assistance, as defined above, will be provided based upon availability, and are limited to those emergency actions necessary to protect onsite personnel, the public health and safety and the environment in the event of a major emergency at the Hanford Site.

This agreement will become effective upon signature and it will continue until it is cancelled by either party by written notice to the other party. This agreement may be amended or modified only upon written agreement by both parties to the agreement.

APPROVED FOR THE DEPARTMENT OF ENERGY -
RICHLAND OPERATIONS OFFICE:

Alex G. Fremling, Manager — December 27, 1982 (Date)

APPROVED FOR THE WASHINGTON PUBLIC POWER
SUPPLY SYSTEM:

R. L. Ferguson, Managing Director — December 8, 1982 (Date)

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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SEATTLE AIR ROUTE TRAFFIC CONTROL CENTER
3101 Auburn Way South
Auburn, Washington 98002

AUG 28 1980

Ms. Pat Turner
Emergency Preparedness Coordinator
United States Dept. of Energy
P.O. Box 550
Richland, Washington 99352

Dear Ms. Turner:

This letter is in response to your request during our conversation regarding development of an emergency response plan for the Hanford Plant near Richland, Washington.

When notified, we will establish flight restrictions within a 10 NM radius of the Pasco VORTAC 298 radial 26 NM fix (the center of the Hanford site) at altitudes 10,000 feet mean sea level and below. We have described the above area based upon your request and to meet NOTAM requirements. These dimensions may be adjusted as you determine appropriate. Seattle Center supervisors and other FAA facilities concerned will be briefed on this matter and a copy of this correspondence will be maintained in our operations area so as to expedite the initial coordination process.

The Notice to Airmen that we originate would designate Walla Walla Flight Service Station as the coordination facility. Walla Walla FSS would serve as the primary communications facility for coordination between your department, disaster control authorities and affected aircraft once the restrictions have been established. Walla Walla FSS's telephone number is FTS 442-5422.

Seattle Center will control aircraft under our jurisdiction to avoid the designated airspace. Any flights associated with your operation may be flown within the established restricted area at your discretion. It may be beneficial, however, that these flights be in direct radio communication with and under the radar surveillance of Seattle Center. Radio frequencies for this service are 132.6 or 125.0.

To establish flight restrictions we request you take the following actions:

1. Notify the Seattle Center Assistant Chief on duty.

   a. Emergency Phone Number - (206) 333-6814. Note: This number is answered by the supervisor in charge and is a recorded line.

b. Additional Phone Numbers Through Our Switchboard

FTS 396-8251, Extension 222 (Changing to 390-1222 on 9/15/80)

(206) 833-6800, Extension 222

(206) 767-2540, Extension 222

c. Back-up Notification Method - Contact Walla Walla FSS Supervisor.

2. Name and organization making the request. Provide phone number for call-back and verification.

3. Briefly describe the situation.

4. Define the airspace requested and duration, if known.

5. Additional information such as radio call signs of sampling aircraft. Your approval of other flights to enter or depart may be coordinated at a later time.

Please contact our office at Seattle Center, (206) 833-6800, extension 242 or 244, if you have further questions or need additional information.

William T. Abernathy

WILLIAM T. ABERNATHY
Chief, Seattle Center

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JAN 25 1985

Mr. Herbert P. Benner, Chief
Meteorological Services Division
National Weather Service
Western Regional Headquarters
P. O. Box 11188, Federal Building
Salt Lake City, Utah 84147

Dear Mr. Benner:

EMERGENCY PREPAREDNESS AND PLANNING

The purpose of this letter is to establish an agreement between the Department of Energy, Richland Operations Office (DOE-RL) and the National Weather Service (NWS), Washington area. The agreement would define responsibilities in planning and preparedness for and response to emergencies at the Hanford Site. The contents of this agreement have been discussed by R. J. Hutcheon, NWS, and D. R. Elle, DOE-RL.

In large part, this agreement represents a formalization of activities that are already ongoing. The following conditions would be applicable to this agreement.

The Department of Energy will provide to the National Weather Service:

1) Notification of emergencies occurring on the Hanford Site upon activation of the DOE Emergency Control Center.

2) Meteorological information including routine hourly surface observations and special observations via AFOS. This information will be provided by the Hanford Meteorology Station operated by the Pacific Northwest Laboratory. In the event of emergencies on the Hanford Site, hourly observations will be supplemented (in the Remarks Section) with observations from the telemetry station on Rattlesnake Mountain (Station #20) and from other reporting stations as necessary. These supplemental observations will consist of station number, wind speed and wind direction. Wind speed and direction will be reported in accordance with Federal Meteorological Handbook No. 1 (Surface Observations). (Special observations may be omitted when the forecaster's workload is such that other duties take precedence.)

The National Weather Service will provide to the Department of Energy:

1) Names, 24-hour telephone numbers, locations and areas of responsibility of NWS offices that may be involved with unusual events, incidents or emergencies on the Hanford Site.

2) Synoptic scale weather information and forecasts in support of activities to mitigate unusual events, incidents or emergencies on the Hanford Site.

The provisions in this letter are believed to be responsive to the needs identified by both DOE-RL and the NWS. This agreement may be terminated by either party upon thirty days written notice to the other party. If these arrangements meet with your approval, please sign and return one copy of this letter.

Sincerely,

Michael J. Lawrence

Michael J. Lawrence
Manager

SQA:DRE

APPROVED:

J. Mark Fair

Acting ~~Herbert P. Benner~~, Chief
Meteorological Services Division

Jan. 29, 1985
Date

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

OCT 0 1 1984

Mr. Willis Bultje, Administrator
Our Lady of Lourdes Hospital
520 North 4th
Pasco, Washington 99301

Dear Mr. Bultje:

As discussed with you on September 20, 1984, the Richland Operations Office of The Department of Energy (DOE) would like to renew the July 3, 1975, agreement with Our Lady of Lourdes Hospital. This agreement provides assurance that in the event of a major radiation accident involving personnel of DOE and its Hanford contractors or subcontractors, the persons affected will be admitted to your facility for appropriate care.

As previously stated, the following conditions will be applicable to the agreement:

1. DOE will provide health physics services and available supporting assistance as requested by Our Lady of Lourdes or the attending physician.

2. The responsibilities of Our Lady of Lourdes will be limited to activities performed at the hospital.

3. Our Lady of Lourdes has the right to limit admission of such patients to those numbers as can be properly handled.

4. Our Lady of Lourdes would serve as one of the backup facilities to DOE's emergency decontamination center in Richland.

5. These arrangements may be terminated by Our Lady of Lourdes or by DOE upon written notice to the other, which notice shall not become effective within less than 30 days after the date thereof.

If these arrangements meet with your approval, I will appreciate your signing and returning one copy of this letter.

Thank you for your consideration.

Sincerely,

Michael J. Lawrence

Michael J. Lawrence
Manager

SQA:KAB

APPROVED:

BY [illegible signature]

Title Administrator

Date October 3, 1984

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

OCT 01 1984

Mr. Jon Davis, Acting Administrator
Kadlec Hospital
888 Swift Boulevard
Richland, Washington 99352

Dear Mr. Davis:

As discussed with you on September 19, 1984, the Richland Operations Office of The Department of Energy (DOE) would like to renew the July 3, 1975, agreement with Kadlec Hospital. This agreement provides assurance, subject to the conditions noted below, that in the event of a radiation accident involving personnel of DOE, its Hanford contractors or subcontractors, the persons affected will be admitted to Kadlec Hospital for appropriate care.

We would also like to confirm our understanding that Kadlec Hospital (Kadlec) will, within the extent of its capability, provide necessary personnel and equipment to care for patients in the Hanford Emergency Decontamination Center (EDC). The following conditions would be applicable to these arrangements.

1. Patients will be admitted by a physician who has staff privileges at Kadlec.

2. DOE will provide health physics services and available supporting assistance as requested by Kadlec or the attending physician.

3. The responsibilities of Kadlec will be limited to activities performed at the hospital and at the EDC.

4. Kadlec has the right to limit admission of such patients to those numbers as can be properly handled.

5. These arrangements may be terminated by Kadlec or by DOE upon written notice to the other, which notice shall not become effective within less than 30 days after the date thereof.

If these arrangements meet with your approval, I will appreciate your signing and returning one copy of this letter.

Thank you for your consideration.

Sincerely,

Michael J. Lawrence

Michael J. Lawrence
Manager

SQA:KAB

APPROVED:

BY Jon R. Davis

Title Acting Administrator

Date 10/8/84

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

OCT 0 1 1984

Mr. Michael R. Fraser, Administrator
Kennewick General Hospital
900 South Auburn
Kennewick, Washington 99336

Dear Mr. Fraser:

As discussed with you on September 19, 1984, the Richland Operations Office of The Department of Energy (DOE) would like to renew the July 3, 1975, agreement with Kennewick General Hospital. This agreement provides assurance that in the event of a major radiation accident involving personnel of DOE and its Hanford contractors or subcontractors, the persons affected will be admitted to your facility for appropriate care.

As previously stated, the following conditions will be applicable to the agreement:

1. DOE will provide health physics services and available supporting assistance as requested by Kennewick General or the attending physician.

2. The responsibilities of Kennewick General will be limited to activities performed at the hospital.

3. Kennewick General has the right to limit admission of such patients to those numbers as can be properly handled.

4. Kennewick General would serve as one of the backup facilities to DOE's emergency decontamination center in Richland.

5. These arrangements may be terminated by Kennewick General or by DOE upon written notice to the other, which notice shall not become effective within less than 30 days after the date thereof.

If these arrangements meet with your approval, I will appreciate your signing and returning one copy of this letter.

Thank you for your consideration.

Sincerely,

Michael J. Lawrence

Michael J. Lawrence
Manager

SQA:KAB

APPROVED:

BY Michael K Fraser

Title Administrator

Date Oct 8, 1984

MEMORANDUM OF UNDERSTANDING

AMONG

U. S. DEPARTMENT OF TRANSPORTATION, COAST GUARD

AND

U. S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
BENTON COUNTY, WASHINGTON

## I. BACKGROUND AND PURPOSE

This memorandum of understanding establishes a framework of cooperation among the U. S. Department of Transportation, Coast Guard, and the U. S. Department of Energy, Richland Operations Office, the Washington Public Power Supply System, and Benton County, Washington in the planning for and response to radiological emergencies within the Hanford Site which may have consequences extending to the Columbia River.

## II. REQUIREMENTS

The Department of Energy's Richland Operations Office (RL) has the primary responsibility for responding to all radiological emergencies generated within its facilities and contained within the Hanford Site boundaries. The Washington Public Power Supply System (Supply System) has the primary responsibility for responding to all radiological emergencies generated within its facilities. Benton and Franklin Counties are responsible for the safety of persons, property, and the environment outside the Hanford Site boundaries within their respective jurisdictional areas. The Coast Guard, Captain of the Port, Portland, Oregon is responsible for the safety of persons, property and environment in those navigable waters and their immediately adjacent shorelines, up to the high water mark, within his jurisdiction (33 CFR 165). The waters and the immediately adjacent shorelines to the DOE Hanford Site are a part of this jurisdiction.

## III. EMERGENCY CLASSIFICATIONS, NOTIFICATION AND EXECUTION

Four classifications of emergencies will be utilized: unusual event, alert, site area emergency, and general emergency. The description of these classifications and the expected response actions are as follows:

Unusual Event - An event in process or having occurred which indicates a potential reduction of the level of safety of a facility. No releases of radioactive material requiring Coast Guard response are expected in an unusual event, therefore, no notification will be provided to the Coast Guard.

Alert - An event in process or having occurred which involves an actual or potential substantial reduction in the level of safety of a facility.

Site Area Emergency - An event in process or having occurred which involves actual or likely major failures of those facility functions needed for the protection of the public.

General Emergency - An event in process or having occurred which involves actual or imminent substantial reduction of facility safety systems.

RL or the Supply System, whichever has the emergency, will notify the Officer of the Day, Coast Guard, Kennewick Station by telepone of the alert, site area, or general emergency. Radio notification to Kennewick Station will be used as an alternate means of communication (157.1 mhz). Based upon the recommendation of RL or Supply System, the Coast Guard will establish a safety zone on the Columbia River and adjoining shoreline up to the high water mark and coordinate an evacuation of the river. The Coast Guard will provide call back verification.

RL will provide during a Hanford site area or general emergency:

- One Hanford Patrol boat, boat operator, and radiation monitor at the Old Hanford Townsite boat ramp to cooperate with the Coast Guard in its response.
- A Patrolman at Vernita Bridge to prevent launching of rafts, canoes, etc.
- Protective clothing and dosimeters for Coast Guard personnel, if required.
- Assistance in conducting surveys and decontamination operations of boats until the Washington State RADCON teams arrive. Decontamination locations will be at Leslie Groves Park and/or the boat ramps near the Old Hanford Townsite or Vernita Bridge, as appropriate.

The Supply System will provide during a Hanford site area or general emergency:

- Helicopter transportation, if available, for Coast Guard personnel from the Kennewick Station to the Old Hanford Townsite boat ramp.
- Protective clothing and dosimeters for Coast Guard personnel, if required.
- Assistance in conducting surveys and decontamination operations of boats, until the Washington State RADCON teams arrive. Decontamination locations will be at Leslie Groves Park and/or the boat ramp near the Old Hanford Townsite, as appropriate.

The Coast Guard, Kennewick Station, and the Captain of the Port, Portland, Oregon contingent upon other operational priorities existing at the time of notification, will provide during a Hanford site area or general emergency:

- Coast Guard personnel to establish a safety zone based upon RL or the Supply System recommendation and coordinate evacuation of the river.

- Coast Guard personnel and equipment to patrol the safety zone and make appropriate radio broadcasts.

- Termination of the safety zone when the Captain of the Port, Portland, Oregon has been satisfied by appropriate authority that the danger no longer exists.

Benton County will provide during a Hanford site area or general emergency:

- Activation of the siren system, based upon a recommendation by RL or Supply System and broadcast over the emergency broadcast system network to evacuate the Columbia River.

- A Sheriff's boat (Benton County boat primary, Franklin County boat alternate), if available, to proceed upriver from the Kennewick Coast Guard Station with Coast Guard personnel, to the Old Hanford Townsite boat ramp.

- Transportation for a Coast Guard Petty Officer from the Kennewick Coast Guard Station to the Old Hanford Townsite boat ramp.

- A Richland policeman at Leslie Groves Park to assist in establishing the safety zone until the Coast Guard arrives.

- Support and assistance to the Coast Guard, as required.

- Arrangements with the Franklin County Sheriff for backup boat, if required.

## IV. TRAINING AND EXERCISES

Radiological response training for Coast Guard personnel will be provided by RL. Annual refresher training will be provided.

A monthly communications exercise will be conducted, initiated by RL or the Supply System.

An annual exercise will be conducted to test notification and operational aspects of an emergency response.

V. TERM OF CONTRACT

This agreement will become effective upon signature and continue until cancelled by any one or more parties by written notice to the other parties. Amendments or modification to this Agreement shall be in writing and signed by all parties to the Agreement.

APPROVED FOR THE U. S. COAST GUARD:

Captain of the Port, Portland, Oregon — Date 21 May 1982

APPROVED FOR THE WASHINGTON PUBLIC POWER SUPPLY SYSTEM:

W. T. Taylor

Health and Safety Programs Manager — Date June 2, 1982

APPROVED FOR BENTON COUNTY, STATE OF WASHINGTON:

Director, Emergency Services — Date 3 June 1982

Sheriff — Date June 10, 1982

APPROVED FOR THE DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE:

Manager — Date June 17, 1982

MEMORANDUM OF UNDERSTANDING
BETWEEN
STATE OF WASHINGTON
STATE OF OREGON
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
AND
U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

RADIOLOGICAL ASSISTANCE RESPONSE

## I. BACKGROUND AND PURPOSE

The Memorandum of Understanding establishes a framework of cooperation between the Washington Public Power Supply System (the Supply System), and the State of Oregon and Washington, and the Department of Energy, Richland Operations Office (DOE-RL), in the planning for and provision and/or coordination of Federal emergency radiological assistance, if required, in the event of an accident at the Supply System's Nuclear Power Plant(s) located near Richland, Washington.

The Federal Radiological Monitoring and Assessment Plan (FRMAP) provides for coordination between signatory Federal Agencies and for the coordination among Federal, State, and local resources in the event that multiagency radiological emergency action is needed to protect public health and safety after the occurrence of a radiological incident. The FRMAP provides for DOE-RL administration, coordination, and implementation of Federal radiological assistance to State government.

The parties hereto desire to implement the provisions of the FRMAP with respect to the Supply System's nuclear plant(s) near Richland, Washington. DOE-RL will coordinate Federal radiological assistance furnished to the Supply System and States of Oregon and Washington, in accordance with the Federal Radiological Monitoring and Assessment Plan.

## II. RESPONSIBILITIES

To the extent available, the Department of Energy's Richland Operations Office will provide or arrange for emergency radiological assistance in the following four categories:

1. Field Monitoring - Provide two-person teams, as required, sustainable for a 24-hour-a-day operation.

2. Dose Assessment Assistance - Consisting of personnel with expertise in the following areas:

   - Plume Radiation Monitoring

   - Ingestion Pathways Radiation Exposures

   - Emergency Worker Radiation Control (exposure evaluation)

3. Aerial Monitoring System (AMS)

4. Other technical support as requested by the Supply System and the States of Oregon and Washington, and as available through FRMAP. DOE-RL will provide to the parties of the agreement the DOE-RL FRMAP plan, procedures, and lists of available resources, support, etc.

## III. NOTIFICATION OF PROCEDURES

The State of Washington delegates to the Supply System the responsibility to notify DOE-RL of an emergency at a Supply System nuclear plant in the interest of public safety.

The Supply System will notify DOE-RL of a radiological emergency at its nuclear plant(s). Upon verification of the information by telephone, DOE-RL will maintain a state of readiness to deploy resources (standby) or activate its teams and provide assistance in the following emergency classifications:

| Type of Assistance | Emergency Alert | Site Emergency | General Emergency |
|---|---|---|---|
| Field Monitoring | Standby/Activation | Standby/Activation | Activation |
| Dose Assessment Assistance | Standby | Standby/Activation | Activation |
| Aerial Monitoring | Standby | Standby/Activation | Activation |
| Other Technical Support | Standby | Standby/Activation | Activation |

## IV. RESPONSE TIMES

Upon notification and subject to availability of personnel and equipment, DOE-RL will alert and notify its emergency response teams who will be directed to report to predetermined locations as soon as possible. Field monitoring teams, as required, will be furnished to the Supply System, Emergency Operations Facility (EOF), within 1 to 2 hours. In addition, DOE-RL will provide or secure other services as requested and as available as provided in the FRMAP as soon as possible.

## V. CONCEPT OF OPERATIONS

DOE-RL will coordinate the Federal radiological assistance response by maintaining liaison with the Supply System EOF. DOE-RL response shall be in accordance with the DOE-RL Region 8 Radiological Assistance Plan and the FRMAP agreement. The Oregon and Washington representatives together with DOE-RL and the Supply System will jointly coordinate and direct field monitoring and dose assessment. The following areas of responsibility are defined as:

Supply System - from the plant(s) to the exclusion boundary

DOE-RL - from the exclusion boundary to the Hanford Site boundary

State of Washington - from the Hanford Site boundary to State's border

State of Oregon - from the Washington/Oregon border to areas within Oregon

The senior Washington State DSHS representative present at the Supply System EOF will be in charge of all dose assessment activities off the Hanford Site.

This will include the formulation of protective action recommendations to the general population. The senior Oregon State representative present at the Supply System EOF will be in charge of coordinating any offsite dose assessment and monitoring activities conducted within the State of Oregon. These agencies agree to immediate exchange of all dose assessment and field monitoring information so that expeditious decisions can be made on necessary protective actions within the areas of responsibility defined above. Prior to the arrival of DSHS representatives at the Supply System EOF, the Supply System shall be responsible for making initial dose assessments and protective action recommendations to local officials. Field monitoring personnel supplied by DOE-RL shall, to the extent possible, be equipped with their own radiation field monitoring equipment which shall be compatible with equipment used by the Supply System and the States of Oregon and Washington field teams. DOE-RL will work with the Supply System and the States of Oregon and Washington to develop standard operating procedures for communications and field monitoring, including calibration of field instruments. The Supply System will make available a dedicated telephone at its EOF for communication to DOE-RL.

## VI. DRILLS AND EXERCISES

DOE-RL will participate at its own expense in drills and exercises at the Supply System Nuclear Plant(s) at the request of the Supply System and States of Washington and Oregon. It is not anticipated that a full response will be required more often than once every three years. DOE-RL may exercise portions of its emergency response capabilities at its discretion on a more frequent basis.

## VII. TERM OF AGREEMENT

This Agreement will become effective upon signature and continue until cancelled by any party by written notice to the others. Amendments or modifications to this Agreement may be made upon written agreement by all parties to the Agreement.

DOE-RL radiological assistance is limited to those emergency actions necessary to protect people from unnecessary radiation exposure, to minimize injury, and to reduce the accidental contamination of the environment from radioactive material. As soon as the immediate hazards are brought under control, and there is reasonable assurance that the public health and safety are being protected, DOE-RL emergency radiological assistance will be terminated and other assistance will be provided as required and agreed upon by the parties of this Agreement.

The parties hereto have executed this agreement this eleventh day of June, 1981.

Governor John D. Spellman
State of Washington

Governor Victor W. Atiyeh
State of Oregon

Robert L. Ferguson, Manager
Washington Public Power Supply System

Alex G. Fremling, Manager
Richland Operations Office
Department of Energy

Approved as to Form

APPENDIX G-3

INCIDENT REPORT FORMATS

# HEALTH AND SAFETY OR PROGRAMMATIC UNUSUAL OCCURRENCE NOTIFICATIONS

## Emergency Assistance

For immediate assistance in emergencies involving fire, explosion, personal injury or illness, emergency rescue, acts of violence or sabotage, call the Hanford Emergency Number, 811. For all other HEDL plant emergencies, call 376-5000.

## Subsequent Notifications - Safety Representatives

In cases of events involving fire, property damage, disabling injuries, motor vehicle accidents or injuries, or accidental release of flammable or toxic materials, notify one of the following employes:

(in the order listed)

| | | Work | Home |
|---|---|---|---|
| FFTF* | - RD Lichfield | 376-0646 | 946-8610 |
| | - DS Penfield | 376-5004 | 1-765-3112 |
| All Other HEDL | - JR Bell | 376-3070 | 375-1813 |
| | - WE Taylor | 376-3015 | 783-2701 |

In cases of events involving radiation or radioactive materials, notify one of the following employes:

(in the order listed)

| | | | |
|---|---|---|---|
| FFTF* | - DE Ames | 376-0737 | 783-1222 |
| | - PR Prevo | 376-2746 | 375-0399 |
| | - FH Briggs | 376-0738 | 586-9277 |
| | - GD Carpenter | 376-3132 | 946-7746 |
| All Other HEDL | - DE Webb | 376-5118 | 943-2359 |
| | - WD Gaines | 376-3217 | 946-8912 |
| | - RL Watts | 376-0560 | 967-2735 |
| | - GD Carpenter | 376-3132 | 946-7746 |

*FFTF Plant maintains a duty roster for notifications that is updated and issued weekly.

## IN ADDITION TO THE ABOVE:

## Public Relations Personnel To Be Notified

In case of an unusual occurrence of the type described in P/P 2-07, "Public Information Releases," notify one of the following employes:

(in the order listed)

| | | |
|---|---|---|
| - WP Whiting | 376-5101 | 783-9591 |
| - MC Druby | 376-5301 | 783-6486 |

P/P 10-01 (Rev. 10)
APPENDIX B
9-30-83

# EVENT FACT SHEET

Fact Sheet Number

Date of Event | Time

PROGRAM/PROJECT ____________________

1. EVENT DESCRIPTION
   a) Nature of Problem:
   b) Location of Event or Occurrence:
   c) Plant Facility Status:
   d) Trends Noted Prior to the Event:

2. APPARENT CAUSES OF EVENT:

3. ACTIONS TAKEN OR PLANNED:

4. TENTATIVE DISPOSITION
   - ☐ Event meets P/P 10-01 criteria for a UOR
   - ☐ Critique required due to further investigation needed to establish appropriate corrective action.
   - ☐ Above criteria not met; no further report.

5. SIGNATURES

____________________ ________
Originator Date

____________________ ________
Approved [illegible] Date

NOTE: See P/P 10-01, Section IV for verbal notification requirements and special reporting requirements for loss of damage to nuclear material and equipment.

# FORMAT FOR CRITIQUES OR UNUSUAL OCCURRENCE REPORTS

Instructions are shown in *Italics.*

Contractor: Westinghouse Hanford Company

Type of Report: ☐ Critique
☐ Unusual Occurrence

Report Number ____________
*[Obtain per procedure V.C.11. Use same number from initial through final report.]*

Status and Date: ___ Initial ____________
*(Check One)*
___ Interim ____________
*[Include date(s) of latest initial or interim report(s) previously filed.]*
___ Final ____________

Date of Event/Occurrence: ____________

Time of Event/Occurrence: ____________

*(If unknown, use date event/occurrence identified and estimate time.)*

1. Department or Project

2. Facility, System, and/or Equipment:

   *Identify the facility (reactor, building, system and/or equipment) for which the report is required. For the FFTF, include system number (e.g., 12H, 51C, etc.) and equipment number (e.g., T42, M-011, pipe number, etc.).*

3. Subject of Event/Occurrence

   *Use a short title that identifies the specific item, nature of the failure, or nature of the unusual occurrence. The title should remain the same from the initial through the final report.*

4. Apparent Cause: Design___ Material___ Personnel___ Procedure___ Other___
   (explain in Item 10) *(More than one may apply.)*

   *Design - Design not correct for application.**

   *Material - Defect in item as received from supplier.**

   *Personnel - Human error, misjudgment, lack of knowledge, carelessness (i.e., loose electrical connection after inspection), etc. Also, indicate group to which personnel belong, e.g.: Operations, Maintenance, vendor, etc.*

   *Procedure - Procedure nonexistent, incorrect, confusing, incomplete, etc. Also, indicate which procedure(s) was inadequate.*

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* *If design or material is identified as the cause of the event/occurrence, identify the component(s) involved by name, part number, model number, and manufacturer and name-plate data. This information is necessary for complete evaluation of similar equipment in other locations.*

5. Description of Event/Occurrence:

   *Give a clear, concise, objective description, including the cause, and when applicable, the mode of failure and the effect of failure. [illegible]*

6. Operating Conditions of Facility at Time of Event/Occurrence:

   *Include the mode of facility operation at the time of the occurrence, if applicable.*

7. Immediate Evaluation:

*Include a discussion of the immediate investigation and evaluation of the event/occurrence, including the evidence which indicated that an event/occurrence had taken place, the apparent or probable causes, and the conclusions reached.*

8. Immediate and/or Temporary Corrective Action Taken and Results:

*Record the corrective action taken and the results therefrom. This may be an immediate or a temporary action in order to keep the facility in a safety standby condition, an action that will allow continued operation without compromising safety until a permanent corrective action can be taken or an action to ameliorate the consequences of the event. These may, in some cases, be long-term actions. If no corrective action was taken, this should be reported with an explanation.*

9. Is Further Evaluation and/or Corrective Action Necessary? Yes___ No___
If Yes, Before Further Operation? Yes___ No___
If Yes, By Whom?______________________________
When?______________________________

*If a date cannot be committed at the time of the initial report, then a date by which one will be available is to be reported.*

10. Final Evaluation and/or Corrective Action Taken___ Recommended___ To Be Supplied___

*Provide the final evaluation and permanent corrective action taken, including the actual cause of the occurrence. Describe how the corrective action resolves the issue and how it will avoid repetition of this and similar occurrences in the future.*

11. Programmatic/Project Cost and Schedule Impact:

*Indicate the full impact on the project or program if a substantial delay or cost increase results. This could be a loss of data, loss of plant availability for a specified period, additional costs, delay in schedule, etc. If actual impact results are different from the initial estimate, the final report should reflect the change.*

12. Impact Upon National Codes and Standards, Including NE Standards:

*If applicable, include the action initiated or to be taken to identify the need for an amendment or revision to the codes or standards and identify the specific laboratory or contractor activity responsible for this action.*

13. Similar Unusual Occurrence Report Numbers:

*Provide the report number(s) of similar unusual occurrences in this facility or in other facilities of which you are aware.*

14.* Signatures:

Originator______________________________ Date______________
*(Title)*

Approved By______________________________ Date______________
*(Title) (Immediate Supervisor)*

Approved By______________________________ Date______________
*(Title) Other Cognizant Management, Safety, Quality Assurance, etc.)*

Approved By______________________________ Date______________
*(Department Manager)*

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* See Section III.F of the policy.

# DISTRIBUTION REQUIREMENTS FOR UNUSUAL OCCURRENCE REPORTS

## 1. INITIAL AND INTERIM REPORTS

| Number of Copies | Distribution |
|---|---|
| 2 | Cover letter addressed to the Cognizant Division Director or Project Office Manager, Richland Operations Office (RL), Department of Energy, Richland, Washington |
| | Copy to each of the following DOE personnel: |
| 1 | • Cognizant Assistant Manager and Deputy Assistant Manager (as appropriate), RL |
| 1 | • Operations Officer, Office of Assistant Manager for Advanced Reactor Programs, RL |
| 1 | • Office of Assistant Manager, Safety, Safeguards and Quality Assurance, RL |
| 1 | • Director, Safety and Quality Assurance Division, RL |
| *R 1 | • Director, Facilities Division (NE 53), HQ |
| 1 | • Director, Office of Safety, Quality Assurance and Safeguards, Nuclear Energy (NE 74), HQ |
| 1 | Manager, Nuclear Standards Management Center, Oak Ridge National Laboratory |
| 1 | President, WHC |
| 1 | Each WHC Department Manager |
| 1 | Manager, Safety |
| 1 | Manager, Operational Safety |
| 1 | Manager, Nuclear Facility Safety |
| 1 | Manager, FFTF Quality Assurance |
| 1 | Manager, Public Relations |
| 2 | Central Files (2 official file copies) |

Other internal distribution based upon the interest in the specific information. (See Section III.F.2. of the policy.)

## 2. FINAL REPORTS

The same copy coverage as indicated for initial and interim reports (above) plus copy to other contractors (including Hanford Contractors) and laboratories which, in the judgment of the department manager, can benefit from the lessons to be learned.

If the occurrence impacts upon the subject matter of an NE Standard, copy to:

- The Standards writer cognizant to that particular standard
- R. A. Thiede, HEDL NE Standards Coordinator, WHC

If the occurrence impacts upon the subject matter of an Industrial Standard, copy to:

- H. J. Anderson, HEDL Industrial Standards Coordinator, WHC

# CRITERIA FOR EVENTS REQUIRING REPORTING AS UNUSUAL OCCURRENCES AND POTENTIAL EXAMPLES

An Unusual Occurrence Report is required when an event causes the results given in the Criteria below. The examples are provided as guidance and are reportable when they cause the results stated in the "Criteria".

1. CRITERIA

Any substantial loss of capability by a protective system (control, safety, shutdown) to perform its intended function.

Potential Examples

a. Loss or partial loss of thermal shields on DOT Type B packages.

b. Failure of a shipping cask's external cooling system.

c. Failure of a safety channel to cause a reactor scram (for any reason) when conditions are more severe than those expected to produce a scram.

d. Failure of a building or site protective system where an emergency power supply was not adequate to supply backup power for the duration of the outage.

e. Failure of instrument systems designed to warn of airborne hazards; high radiation or criticality, stack releases, etc.

f. Repeated failures of similar components within protective systems that would indicate the inadequacy of the failed component.

g. Failure of essential equipment in control, safety or shutdown systems.

h. Detection of the inability of an engineered safety or emergency system to function as intended.

i. Rupture or degradation of integrity (e.g., cracks, excessive corrosion) of important equipment and systems.

2. CRITERIA

Any violation of a DOE prescribed or approved Technical Specification (Reactor Facilities) or Operating Safety Requirement (Nonreactor Facilities).

Potential Examples

a. Violation of critical mass limits.

b. Violation of pressure or temperature limits specified for safety purposes.

c. A reactivity transient which momentarily exceeds the established safety limit for reactor power (or neutron flux).

d. An increased fire loss potential beyond DOE limits where the increase is due to a failure of administrative controls to limit the values at risk.

e. Discovery of an instrument setting which could allow a technical specification to be exceeded.

f. Failure to maintain required shutdown margins during refueling activities.

g. A condition outside specified Technical Specifications.

3. CRITERIA

Any substantial degradation of a barrier designed to contain radiation or toxic material or any substantial unplanned release of radioactive or toxic material past this barrier.

Potential Examples

a. Leaks from pipes, valves, tanks, or drums which could create onsite, offsite or public concern.

b. Holding pond failure or overflow.

c. Failure or deterioration of radiation shields.

d. The release of toxic materials which results or could result in significant or substantial exposures to personnel, e.g., PCB spill, Cl, Na aerosol.

e. Failure of ventilation system or fire doors and dampers in radioactive cells.

f. Channeling in charcoal filters.

g. Unexpected fuel cladding breaches or melting of fuel or fuel cladding material.

h. Loss of contamination control which results in spread of contamination outside established radiation zones or detectable internal depositions or which requires offsite radiation surveys.

4. CRITERIA

The loss of control over radioactive material or processes involving radioactive substances which indicates either operating or administrative control inadequacies.

Potential Examples

a. Release of radioactive material in excess of Release Guides or of unknown or unusual composition.

b. Any significant personnel contamination.

c. Loss of accountability of a nuclear source in excess of exempt quantities as specified in 10 CFR 30, Appendix B, and State Standards.

d. Loss of contamination control which results in spread of contamination outside established radiation zones.

e. Personnel exposure in excess of approved limits.

f. Failure to detect and control an unshielded radiography source before allowing access to the area where the source was used.

5. CRITERIA

Any substantial unplanned or unexpected change in a process condition or variable (temperature, pressure, pH, reactivity, flow, concentration, radiation level etc.) of importance to performance, reliability or safety whether abrupt or long term.

Potential Examples

a. pH changes resulting in precipitation of fissile materials in equipment designed to be safe for dilute processes.

b. Unexpected radiation levels during radioactive liquid batch transfers which could cause excessive personnel exposure.

c. Significant changes in reactor coolant chemistry conditions.

5. Potential Examples (Continued)

d. Unexpected reactor or facility protective shutdown.

e. Unplanned criticality.

f. Deviation from designated limits of predicted critical control rod positions.

g. Significant deviation from reactor response expected from changes in control rod position, temperature, load, etc.

h. Significant unexplained or unexpected reactivity change.

6. CRITERIA

Any fire or explosion which substantially affects or directly threatens safe or reliable operation of the facility.

Potential Examples

a. Fires involving: gloveboxes, roof, lube oil, transformers, shield materials, liquid metals or fissionable or other radioactive materials.

b. Explosions as applicable to above.

c. Any explosion in process or storage equipment.

d. Any fire in a reactor or process control room, including fires limited to within control panels.

7. CRITERIA

Substantial failure of a process controlling device of importance to safety to function as required during operation or periodic in-service testing.

Potential Examples

a. Failure of pH control in dissolving or precipitating operations.

b. Failure of gas release control system.

c. Failure of a control rod in a reactor to scram on demand during a prestart check.

d. Loss of over or under pressure protection.

e. Failure of circuits that signal unsafe/safe conditions when radiation producing machinery (x-ray, accelerators, etc.) is activated/deactivated.

f. Failure of isolation valves to perform the intended function.

8. CRITERIA

Any design deficiency, construction or fabrication error found during construction, testing, modification or operation which, had it remained undetected, could have had a substantial adverse effect on the performance, reliability or safety of the operation at some point during its design lifetime. In the event that construction or acceptance testing turns up unexpected results, UOR's are required if major programmatic impact results or the lessons learned are of value to other sites.

Potential Examples

a. Improper specification or location of sensing devices which are essential to process or radiation control.

b. Insufficient, inadequate or improperly installed fire protection devices.

8. <u>Potential Examples</u> (Continued)

c. Inadequate shielding for the projected operation.

d. Detection of the cracking of a reactor component when failure could result in interference with safety devices or coolant flow or in loss of coolant.

e. Omission of vents, drains, curbs or other devices intended to limit flammable vapor or liquid accumulations.

f. Inadequate or improperly located air sampling devices.

g. Inadequate insulation of heat transfer surfaces that would reduce the design life of adjacent concrete structures.

h. Gross failure of a prototype component reactor plant system during testing or failure of an important test.

i. An overstress condition which requires modification of a fabricated component or of a critical system.

9. <u>CRITERIA</u>

Any condition resulting from natural events or man-made activities which substantially affects or threatens performance, reliability or safe operation.

<u>Potential Examples</u>

a. Wind or flood damage, disruption of water supply.

b. Sabotage and arson.

c. Construction or modification penetration of fire/radiation barriers that have not been corrected or are made without alternate means of protection.

d. Soil stability problems affecting or threatening the structural integrity of vital buildings or services.

e. Damage to eqiupment by fabrication, construction, testing or operating activities.

10. <u>CRITERIA</u>

Any deviation from approved procedures that results in substantial performance, reliability or safety degradations.

<u>Potential Examples</u>

a. Operation of a cell at temperatures and pressures above those specified.

b. Repeated or flagrant failure of workers to use protective equipment.

c. Deviation from a procedure that requires verbatim compliance.

d. Damage to systems/components attributable to failure to follow approved operating procedures.

11. <u>CRITERIA</u>

Any foreign object, discovered within a system, which substantially affects or could threaten the performance, reliability or safety of operation.

<u>Potential Examples</u>

a. A foreign object which is recovered from the plenum of a heat exchanger during maintenance on that unit.

b. Radioactively contaminated material in a nonradioactive waste disposal system.

c. Valve internals which were expected to flow and which are missing.

11. Potential Examples (Continued)

d. Foreign objects of significant size lost in a reactor coolant system.

e. Oil discovered in a sodium reector coolant system.

12. CRITERIA

Any structure, system, or component failure which directly affects or threatens performance, reliability or safe operation.

Potential Examples

a. Failure of structural members.

b. Failure of fire fighting equipment.

c. Failure of normal constraints of a component in the reactor vessel.

d. Failures of systems that allow personnel to unknowingly enter areas thought to be free from hazards. (Work spaces with high residual ozone, CO, $CO_2$, airborne radioactivity, high gamma levels, etc.)

e. Complete failure of control room ventilation/isolation systems to perform intended functions.

13. CRITERIA

Any series of related events which individually do not warrant reporting, but which collectively reach a level of substantial concern related to the performance, reliability, safety or security of the facility.

Potential Examples

a. Failure of redundant circuits, e.g., a diode in a reactor scram circuit found shorted during a routine maintenance check. The scram function is not impaired because of a second good diode. Checks of other identical circuits reveal a number of similar failures.

b. Failures or impairments of individual fire detectors or sprinklers which do not prevent the overall system from functioning but which are occurring in increasing numbers or with increasing frequency.

c. Frequent tripping of circuit breakers, ground fault circuit interrupters, and similar protective devices of a common type or servicing a common area.

d. Numerous or increasingly frequent failures of one make or type of safety device, such as fire hose, extinguisher cylinders, or breathing air cylinders, during periodic pressure testing programs.

14. CRITERIA

Fatalities, serious physical injury or cases of illness of obscure etiology where the occupational medical director determines that an occupational relationship is suspected but not demonstrable.

15. CRITERIA

Substantial performance, reliability or safety problems caused by inaccurate or inadequate information on design requirements, specifications or procedures.

Potential Examples

a. Lifting or handling damage of critical items.

b. Major insulation or air conditioning inadequacies.

c. Significant errors in engineering analytical codes (computer programs or relative instructions).

16. <u>CRITERIA</u>

Any substantial breach or degradation of security.

<u>Potential Examples</u>

a. Theft or loss of equipment, material, components, plans or other items; and actual or suspected cases of sabotage, arson or other acts of violence.

b. Instances of (1) missing, discrete, identifiable items of source and special nuclear (SS) materials; and (2) significant Inventory Difference (ID) underages or overages of plutonium or uranium (enriched in the U-233 or U-235 isotopes) within an individual Material Balance Area (MBA) per inventory period.

17. <u>CRITERIA</u>

Unexpected failure of a system or component essential to plant operation to meet performance requirements during operations or in-service testing.

<u>Potential Examples</u>

a. Containment failing to meet its leak test requirements.

b. Cooling system failures that cause capacity to go below facility required minimums.

18. <u>CRITERIA</u>

Inadequate experimental test design, fabrication or performance that significantly jeopardizes a major test facility or major program objective. (See Item 8 for tests that indicate deficiencies in plant design or plant components.)

<u>Potential Examples</u>

a. Failure to obtain important temperature or flow information on an in-reactor experiment.

b. Unexpected in-reactor experiment meltdown.

c. Gross contamination of reactor coolant caused by experiment failure.

19. <u>CRITERIA</u>

Latent defects or nonconformances in materials or equipment recognized after the acceptance of the item.

20. <u>CRITERIA</u>

Unplanned activation of an emergency system, such as transfer of electrical loads to emergency diesel or battery sources, activation of isolation valves, when such emergency system has a significant programmatic impact, and when such emergency system is activated in a nonemergency situation.

21. <u>CRITERIA</u>

Damage to fuel elements or core components at any stage of fabrication or handling.

22. <u>CRITERIA</u>

Any event, or sequence of events, agreed upon between the DOE FFTF Project Office and cognizant WHC Department Manager.

23. <u>CRITERIA</u>

Recognition and confirmation of errors in reported results from development or study programs which, if used in design, would significantly reduce the safety margins of safety-related equipment or facilities.

# REVIEW AND EVALUATION OF UORs POTENTIALLY REPORTABLE AS DEFECTS AND NONCOMPLIANCES

## I. GENERAL

Unusual Occurrences experienced on NRC-licensed facilities or equipment or on development programs in support of facilities subject to licensing, may be reportable as Defects or Noncompliances. This appendix describes the identification, review, and evaluation and reporting of such events.

## II. DEFINITIONS

A. <u>Basic Component</u>

1. When applied to nuclear power reactors, means a plant structure, system, component or part thereof (including development, design, inspection, testing or consulting services related to such components) necessary to assure:

a. the integrity of the reactor coolant pressure boundary,

b. the capability to shut down the reactor and maintain it in a safe condition, or

c. the capability to prevent or mitigate the consequences of accidents which could result in high level offsite radioactivity exposures.

Note that these criteria are consistent with those established by the NRC for identifying Seismic Class I components.

2. When applied to other facilities and activities licensed by the NRC, means a component, structure, system or part thereof that is directly procured by the licensee in which a Defect or Noncompliance could create a Substantial Safety Hazard.

B. <u>Defect</u>

1. A departure from the technical requirements for a delivered (see II.C) Basic Component, if, on the basis of an Evaluation, the departure could create a Substantial Safety Hazard; or

2. The installation, use or operation of a Basic Component containing the aforementioned Defect; or

3. A condition or circumstance involving a Basic Component that could contribute to the exceeding of a safety limit, as defined in the technical specifications of a license for operation of a nuclear reactor.

C. <u>Delivered</u> - For purposes of this P/P, a Basic Component is considered "delivered" after the purchaser takes control over the item, and it passes through receipt and any required receiving inspection. When receipt or receiving inspection is delayed, the item may nonetheless be considered "delivered." Consult Contract Administration in such cases.

D. <u>Evaluation</u> - The process accomplished by or for a licensee to determine whether a particular Safety Concern could create a Substantial Safety Hazard (and is therefore a Defect).

E. <u>Noncompliance</u> - A failure in a Basic Component to comply with a license requirement, statute or regulation related to Substantial Safety Hazards.

F. <u>Safety Concern</u> - As used herein, a potential Defect or Noncompliance.

G. <u>Substantial Safety Hazard</u> - A loss of safety function to the extent that there is a major reduction in the degree of protection provided to public health and safety. Substantial Safety Hazards include conditions which could have consequences such as the following:

- Exposure in excess of 25 rems, whole body, in an unrestricted area.
- Exposure of an individual in an unrestricted area to more than 0.5 rem in one calendar year.
- Release of radioactive material to an unrestricted area in excess of 500 times the limit of 10 CFR 20, Appendix B, Table II (see WHAN-M-8, "Radiation Protection Procedures").
- Exceeding a safety limit as defined in the facility technical specifications.
- A deficiency which seriously compromises the ability of a confinement system to perform its designated function.

## III. PROCEDURE

*Cognizant Managers*

1. Identify programs and Basic Components in support of licensed facilities and advise WHC Quality Assurance, who maintains the master list for WHC.

2. Identify Basic Components to be procured for such equipment or programs and take steps to have Purchasing notify the suppliers of such equipment of 10 CFR 21 applicability.

## III. PROCEDURE (Continued)

*Cognizant Managers (cont'd)*

3. Identify UORs on those programs or equipment which constitute Safety Concerns.

4. Review Safety Concerns, including referrals from suppliers. Screen out those which are clearly not Defects or Noncompliances.

5. Formally refer remaining Safety Concerns to the WHC Safety Review Committee.

*WHC Safety Review Committee*

6. Reviews Safety Concerns referred to it. Screens out those which it determines are not Defects or Noncompliances.

7. Maintains records of its deliberations and all follow-up actions on potential Defects and Noncompliances and advises WHC management of its conclusions and actions.

*WHC President*

8. Receives recommendation as to whether or not the Safety Concern constitutes a Defect or Noncompliance, or whether, in the case of Basic Components delivered by WHC to the purchaser, it should be referred to the purchaser for evaluation.

9. Acts on recommendation, as appropriate.

10. Provides complete records to the WHC Safety Review Committee.

# UNUSUAL OCCURRENCE REPORT

Page 1 of ______

CONTRACTOR

| UOR No. | 2. Status and Date |
|---|---|
| | Initial ______ <br> Interim ______ <br> Final ______ |

3. Department or Project:

| 4. Facility, System, or Equipment: | 5. Date of Occurrence | 6. Time of Occurrence |
|---|---|---|
| | | |

7. Subject of Occurrence.

8. Apparent Cause.

Design ☐ Material ☐ Personnel ☐ Procedure ☐ Other ☐ (Explain in Item 14)

9. Description of Occurrence

10. Operating Conditions of Facility at Time of Occurrence

54-3000 588 (R-1-

## UNUSUAL OCCURRENCE REPORT (continued)



UOR No. | UOR Date

11. Immediate Evaluation:

12. Immediate Action Taken and Results:

13. Is Further Evaluation Required: Yes ☐ No ☐

If Yes, Before Further Operation: Yes ☐ No ☐

If Yes, By Whom? ______

When: ______

NCR Required? ☐ Yes ☐ No

☐ NCR Number

Facility QA Rep. Signature

14. Final Evaluation and Lessons Learned:

15. Corrective Action: Taken ☐ Recommended ☐ To be supplied ☐

16. Programmatic Impact:

17. Impact Codes and Standards:

18. Similar Unusual Occurrence Report Numbers:

| 19 Signatures - Originator | Title | Date |
|---|---|---|
| | | |
| | | |
| | | |

# DISTRIBUTION REQUIREMENTS FOR UNUSUAL OCCURRENCE REPORTS

## 1. INITIAL AND INTERIM REPORTS

| Number of Copies | Distribution |
|---|---|
| 2 | Cover letter addressed to the Cognizant Division Director or Project Office Manager, Richland Operations Office (RL), Department of Energy, Richland, Washington |
| | Copy to each of the following DOE personnel: |
| 1 | • Cognizant Assistant Manager and Deputy Assistant Manager (as appropriate), RL |
| 1 | • Operations Officer, Office of Assistant Manager for Advanced Reactor Programs, RL |
| 1 | • Office of Assistant Manager, Safety, Safeguards and Quality Assurance, RL |
| 1 | • Director, Safety and Environmental Protection Division, RL |
| 1 | • Director, Quality Assurance Division, RL |
| 1 | • Director, Office of Reactor Research and Technology (RRT), HQ |
| 1 | • Director, Office of Safety, Quality Assurance and Safeguards, Nuclear Energy (NE), HQ |
| 1 | Manager, Nuclear Standards Management Center, Oak Ridge National Laboratory |
| 1 | President, WHC |
| 1 | Each WHC Department Manager |
| 1 | Manager, Operational Safety |
| 1 | Manager, Nuclear Facility Safety |
| 1 | Manager, FFTF QA |
| 1 | Manager, Laboratory Engineering and Design |
| 1 | Manager, Public Relations |
| 2 | Central Files (2 official file copies) |
| | Other internal distribution based upon the interest in the specific information. (See Section III.F.2 of the policy.) |

## 2. FINAL REPORTS

The same copy coverage as indicated for initial and interim reports (above) plus copy to other contractors (including Hanford Contractors) and laboratories which, in the judgment of the department manager, can benefit from the lessons to be learned.

If the occurrence impacts upon the subject matter of an RDT Standard, copy to:

- The Standards writer cognizant to that particular standard
- R. A. Thiede, HEDL RDT Standards Coordinator, WHC

If the occurrence impacts upon the subject matter of an Industrial Standard, copy to:

- H. J. Anderson, HEDL Industrial Standards Coordinator, WHC

EXTERNAL DISTRIBUTION
FOR
UNUSUAL OCCURRENCE REPORTS

DOE/RL

| | |
|---|---|
| A.J. Rizzo, Asst. Manager, Advanced Reactor Programs | FED/701 |
| O.L. Olsen, Deputy Asst. Manager, Advanced Reactor Programs | 3763 Bldg. |
| R.J. Myjak, Operations Officer, Advanced Reactor Programs | FED/701 |
| J.H. Straub, Asst. Manager, Safety, Safeguards & QA-RL | FED/704 |
| J.L. Rhoades, Director, Safety & EP-RL | FED/616 |
| R.E. Gerton, Director, QA-RL | FED/680-A |

DOE/RRT/HQ

Director, RRT-HQ

A. J. Pressesky, Director, Safety, QA & Safeguards

ORNL

Nuclear Standards Management Center

Please call Pat Lee (6-3686) if there are any Additions, Deletions, or Changes to the List.

# SECTION H
# PERSONNEL TRAINING

The information contained in this section outlines the Westinghouse Hanford Company (WHC) Hazardous Waste Training Programs for the hazardous waste facilities in the 100, 200, 300, and 400 Areas of the Hanford Site. The objective of the WHC hazardous waste training programs is to ensure that WHC personnel have the necessary training, education, experience, and skills commensurate with their level of responsibility and the nature of their assigned duties to assure that the Hanford Engineering and Development Laboratory (HEDL) facilities will be operated in a safe, efficient manner. The programs are structured to satisfy the requirements of the Washington Administrative Code 173-303-806(4)(a)(xii) and -330 and 40 CFR 270.14(b)(12) and 264.16.

## H-1 OUTLINE OF THE TRAINING PROGRAM

Because of the unique nature of the WHC activities, individual staff groups require specialized training tailored to their specific work areas and responsibilities. Four stages of Hazardous Waste Training exist:

- o Introductory
- o Generator
- o Treatment, Storage and Disposal Facility Operator
- o Waste Handling Technicians

The Introductory Training is provided to all WHC personnel, i.e., Janitorial, Clerical and Non-Laboratory personnel. As a minimum, workplace meetings will be conducted to convey the general contents of various Department of Energy, Washington State Department of Ecology, and WHC regulations regarding hazardous waste. In addition, information will be provided on any specific chemical that the employee uses. Emphasis will also be placed on notifying Waste Systems Engineering or Waste Systems Operations prior to disposal of chemicals.

Generator training is provided, in addition to the Introductory Training listed above, to WHC personnel who perform activities that result in the need to dispose of a material that is considered a hazardous waste. The training will be specific for the particular waste generated by the group. Waste Systems Engineering must be consulted to determine the classification of all wastes generated. As a minimum, workplace meetings will be conducted to convey the applicability of the WAC 173-303 to operations performed by the work group. Waste Systems Engineering may be consulted or assist with this training. Task specific training is also provided on safety procedures, contingency and emergency plans.

The Treatment, Storage and Disposal (TSD) Operator training is provided to personnel who perform activities in a TSD Facility. In addition to the Introductory Training and Generator Training, the Operator Training Program includes the following:

- Procedures for using, inspecting and maintaining facility equipment
- Response to communication and/or alarm systems
- Response to fire or explosions
- Response to spills
- Emergency shutdown of operations

In addition to the Introductory and Generator Training, Waste Handling Technician Training is provided to the Waste Systems Operations technicians, who are the only personnel currently responsible for collecting, packaging and transferring hazardous waste to the 200 Area Hanford Waste contractor. This training is very task-specific.

Retraining requirements exist to assure that employees receive the appropriate refresher and new information on an annual basis.

## H-1a Job Title and Job Description

### 3718 F

Operations at 3718-F Alkali Metal Treatment and Storage Facility are under the authority of the Waste Systems Operations' supervisor. The supervisor/building administrator, Waste Systems Operations, reports to the manager, Program Maintenance Support. Operational functions at 3718-F are performed by Waste Systems Operations technicians.

The job title and job description for each position related to dangerous waste management at 3718-F is contained in Appendix H-1.

221-T and 105-DR

Operations at 105-DR and 221-T are under the authority of the Sodium Systems Development manager. Operational functions at the Containment Systems Test Facility and Large Sodium Fire Facility are performed by the technician/operator.

The job title and job description for each position related to dangerous waste management is contained in Appendix H-1.

MASF

Operations at the Maintenance and Storage Facility (MASF) are managed by the Examination and Decontamination Services (EDS) Operations manager. Operational functions at the MASF are performed by MASF Watch Technicians.

The job title and job description for each position related to dangerous waste management at MASF are contained in Appendix H-1.

324 SRPP

The 324 Building Sodium Removal Pilot Plant is not an operating facility at this time. Should the facility treat waste at a future time, the job descriptions of the operating technicians will be similar to those of the 3718-F technicians.

H-1b Training Content, Frequency and Techniques

WHC provides an extensive program of instruction for employees covering safe work practices and the handling of dangerous materials. The dangerous waste handling aspects of these programs were enhanced in 1984 and additional revisions have been made to update the course content for compliance with the WAC-173-303-330. Four levels of Hazardous Waste Training exist:

- o Introductory
- o Generator
- o TSD Facility Operators
- o Waste Handling Technicians

Introductory Training

The Introductory Training is provided to all personnel. The New Employee Checklist form (see Figure H-1) includes Dangerous Waste Handling. Following is a list of items that are discussed with each new WHC employee:

- EPA Resource Conservation and Recovery Act (RCRA) regulations enacted in 1980 and the Washington State "Dangerous Waste Regulations" enacted in 1984.
- Hazardous materials are not to be disposed of in the Sanitary Sewer, Process Sewer (PS), Retention Process Sewer (RPS) or intentionally evaporated or diluted.
- Non-radioactive hazardous materials are not to be deliberately disposed of in the Radioactive Liquid Waste Sewer (RLWS).
- Hazardous materials are collected by Lab personnel and picked up by Waste Systems Operations for final disposal by RHO.
- Emphasis is placed on reusing, recycling or excessing those hazardous materials before declaring them waste.
- There are three (3) categories of hazardous waste - dangerous waste (DW), extremely hazardous waste (EHW) and other regulated waste (asbestos, oil, etc.).
- The Hazardous Waste Committee decides which materials are hazardous waste and investigates hazardous waste spills.
- All spills and violations will be reported ASAP to your supervisor.
- Further information can be obtained from MG-75, "Waste Management Manual," MG-99, "Environmental Protection," and WHAN-M-11, "Industrial Safety" (see Appendix H-2).
- Questions should be directed to Waste Systems Engineering (WSE) or Environmental & Radiological Engineering (E&RE).
- Generally, manufactured items when used according to the manufacturer's instructions, are not considered as dangerous waste unless disposed of in large unused amounts.

Annual retraining of employees is conducted at workplace meetings. This training and retraining is documented and training records are kept on file at the facilities and are available to regulatory agency officials for review.

Since November 19, 1980, Waste Systems Engineering has published several documents relating to hazardous chemical waste disposal. These include letters to all employees, letters to all managers, articles in the "Westinghouse News," articles in the "Safety Pen," and articles in the Hazardous Materials Transportation's "Chalkboard" Newsletter. These represent the ongoing effort to keep employees aware of proper hazardous chemical waste disposal methods.

Generator Training

The Generator Training, in addition to the Introductory Training, is provided to WHC personnel who perform activities that require the disposal of a hazardous waste. An example of a Generator Training course follows:

I. What is hazardous waste?
  A. Corrosive
    1. Acids (pH $<2$)
    2. Bases (pH $>12.5$)
  B. Ignitability
  C. Toxicity
    1. Heavy metals
       EX: Lead, mercury
    2. Carcinogens (agent producing or inciting cancer)
       EX: PCB's, chromites
  D. Reactivity
    1. Explosive
    2. Peroxides (an oxide containing a high proportion of $O_2$)
    3. Reacts with water (Na, NaK)
  E. Persistence
    1. Halogenated Hydrocarbons
    2. Polycyclic Aromatic Hydrocarbons
  F. Lists in Washington Regulations and EPA Regulations.

II. Background
  A. May 84 - Washington State issues Dangerous Waste Regulation
  B. Sep 84 - DOE issues order 5480.2
  C. Dec 84 - Implementation Plan to Washington Department of Ecology
  D. Feb 85 - Implementation of Westinghouse Hanford Waste Policy
  E. All of the above are the result of Federal Regulations
    1. All are implemented for protection of people and the environment.
    2. To prevent any more Love Canals.

III. Impact
  A. This is more of a philosophy change.
    1. Used to dump chemicals down the drain and let the waste system process dilute until the end product was within spec.
    2. Philosophy now is to limit input and to recycle or destroy chemicals prior to processing.
  B. Revision of procedures and manuals will reflect new regulations.
  C. Training and informing personnel.

D. Equipment modifications
   EX: Additions of sampling points in some systems.
E. Extra analysis
   EX: Drilling of new groundwater sample wells.

IV. Non-Radioactive Dangerous Waste Disposal Instructions for General Chemical Classes

A. Attachment 1, See Appendix H-3, provides some instructions on the classification and disposal of general chemical classes listed below:
   1. Janitorial products
   2. Solvents, degreasing agents, and cleaning agents
   3. Paint Material
   4. Lubricants, fuel oil, gasolines, kerosene, etc.
   5. Biocides
   6. Sewer discharges
   7. Refrigerants and coolants
   8. Generally used acids and bases
   9. Miscellaneous materials
   10. Laboratory chemicals
   11. Other chemicals

V. General Instructions for Implementation of the Washington State Dangerous Waste Regulations

A. Attachment 2, See Appendix H-4, provides general instructions for handling and disposing of dangerous and extremely hazardous wastes by WHC at Hanford. Guidelines and WHC policy are outlined below:
   1. All non-radioactive chemical wastes must be reported to Waste Systems Engineering (WSE).
   2. Designation of chemical waste streams as Dangerous, Extremely Hazardous or Non-Dangerous shall only be performed by the manager of WSE or the Hazardous Waste Committee set up by WSE for that purpose.
   3. Preliminary Dangerous Waste or Excess Chemical Handling Procedures.
      a. Questions should be directed to WSE.
      b. All chemicals should be reused, excessed or recycled if possible.
      c. Procedures must be written or amended to include proper handling of waste streams.
      d. Use "Request to Dispose of Non-radioactive Material" form for disposal. Sample form attached.
      e. Usage of proper containers for collecting and disposal.
      f. Container Labeling
      g. Recordkeeping
      h. Pickup procedure
      i. Cost
      j. Audit
      k. Spills
      l. Training
         1) Training should be documented to employee manager's individual training file and copy to Manager, WSE. The letter should include:
            a) Subject covered
            b) Attendees
            c) Date
            d) Employee's manager or training representative signature

VI. Responsibilities

A. All persons are legally responsible for dumping hazardous materials under the new regulations.
B. Violations of new regulations can be punishable by both fine and jail sentence.
C. State officials can come on-site to inspect for regulation compliance.
D. If further information is needed or further consultation, contact either Waste Systems Engineering (6-3231/6-3014) or Waste Systems Operations (6-3012).
E. At this time, the regulation for in-field use is being formulated. All decisions are being handled on a case-by-case basis.
F. A UOR will be generated if dangerous waste is disposed of improperly. WSE will review all waste given to Waste Systems Operations (WSO) and provide guidance if specific waste should be disposed of differently than the general instructions indicate.

The training will also include specific training for management of the particular waste generated by the group. This training will be conducted through workplace meetings and on-the-job training with emphasis on proper disposal methods.

Training and retraining records are kept on file at the facilities and are available to regulatory agency officials for review.

Treatment, Storage and Disposal Facility Operator Training

The Treatment, Storage and Disposal Training includes the information covered in the Introductory and Generator training plus training in:

- Procedures for using, inspecting and maintaining facility equipment
- Response to communication and alarm systems
- Response to fire or explosions
- Response to spills
- Emergency shutdown of operations

This training is provided to ensure that personnel will have the necessary knowledge and skills to safely, effectively and efficiently operate the facilities in both normal and emergency situations.

Methods of training include on-the-job/hands-on operation experience, self-study, oral examinations, and written examinations.

During the initial training phase, on-the-job/hands-on operation training will be provided. The trainee will assist other trained operators in performing their operational duties. Each system will be explained to the trainee, and the trainee will be provided with the facility description and all procedures (including but not limited to the facility Standard Operating Procedures, Emergency Procedures, and Job Hazard Breakdowns).

The trainee will be required to become knowledgeable with all facility procedures, and encouraged to ask questions regarding each system. Trainees will be present and observe as all systems are operated. Based on the judgement of the qualified operator, they may have the trainee actually perform some operations, but only in the presence of, and under the direction of, the qualified operator.

The trainee will be expected to conduct an extensive self-study of all available material pertaining to operation of the facility. This study shall include:

- Training manuals
- Operating procedures
- Job safety analyses
- Drawings

Written and oral examinations will be given to each trainee on each of the facility systems. Successful completion of these oral and written examinations on a per-system basis will allow the trainee to proceed to the final step of qualification, that of satisfactory operation of the system by the trainee under the direction of a qualified operator.

Waste Handling Technician Training

The final level of Hazardous Waste Training is for Waste Handling Technicians. This training is in addition to those levels discussed above and is provided to the Waste Systems Operations technicians who are the only personnel currently trained as Hazardous Waste Handlers.

The Waste Handling training program is broken down into categories as follows:

- Classroom training

- o Equipment operation
- o Administrative controls and documentation
- o Supervised practical experience in hazardous waste handling techniques

Using the Waste Systems Operations (WSO) Technician Qualification Guide, WSO technicians will pursue an extensive self-study program including but not limited to:

- o WSO Training Manual
- o WSO Standard Operating Procedures
- o Applicable Job Hazard Analyses
- o Facility and equipment drawings

On-the-job training will provide supervised practical experience in hazardous waste handling techniques. Retraining is required on an annual basis to maintain systems qualifications.

Training and retraining records are maintained at the facility and are available to regulatory agency officials for review.

H-1c <u>Training Director</u>
The Hazardous Waste Training Program is presently directed by Robert L. Martin, Manager of Waste Systems Engineering. Mr. Martin has been with WHC for twelve years. He received his B.S. degree in Chemistry from Youngstown University in 1958. He has been trained in all aspects of hazardous waste management and attended various seminars on this subject. Records of this previous and ongoing training are kept on file at the WHC personnel office.

H-1d <u>Relevance of Training to Job Position</u>
Mr. Robert L. Martin, Hazardous Waste Training Director, is responsible for ensuring that all personnel have the necessary training commensurate with their level of responsibility and the nature of their assigned duties. All personnel, i.e., Janitorial, Clerical and Non-Laboratory, are provided with the introductory level of hazardous waste training. Generator Training, in addition to Introductory Training, is provided to WHC personnel who perform activities that result in the need to dispose of a material that is considered

a hazardous waste. Treatment, Storage and Disposal (TSD) Operator training is provided to personnel who perform activities in TSD facilities: 3718-F, 105-DR, 221-T, 340, MASF and 324 SRPP. Waste Handling training is provided to the Waste Systems Operations technicians who are responsible for collecting and packing hazardous waste from the 300 and 400 Areas prior to transfer to the 200 Area Hanford Waste contractor.

H-1e Training for Emergency Response

The WHC training programs are designed to train personnel to not only handle hazardous waste in a safe manner, but also to properly respond to emergency situations. The programs train hazardous waste handling/management personnel to maintain compliance under both normal operating conditions and emergency conditions. On-the-job training elements addressing nonroutine and emergency situations such as fires, explosions, spills, power outages, criticality accidents, and emergency shutdowns include:

- Procedures for locating, using, inspecting, repairing, and replacing facility emergency and monitoring equipment
- Emergency communication procedures and alarm systems
- Response to fires or explosions
- Response to incidents and procedures for containing, controlling, and mitigating spills that may potentially migrate to groundwater
- Response to criticality accidents and high radiation
- Shutdowns of operations and power failure procedures
- Procedures for evacuation of nearby areas

## H-2 IMPLEMENTATION OF TRAINING PROGRAM

The director of the training program and current waste-handling personnel have been trained at the time of this submittal. All new personnel must complete this training program within six months of assignment to the active areas of hazardous waste storage, treatment, or disposal, or within six months of their date of employment, whichever is later. No employee hired to work at these facilities will work unsupervised prior to completion of the training program.

Training records documenting that facility personnel have received and completed required training are maintained at each facility.

| Hanford Engineering Development Laboratory | Westinghouse Hanford Company<br>A subsidiary of Westinghouse Electric Corporation<br>P. O. Box 1970 Richland, Wa 99352 | NEW EMPLOYE CHECKLIST |
|---|---|---|

| Name | | | Job Title | | | Payroll No. |
|---|---|---|---|---|---|---|
| Supervisor | | | Hire Date | Org. Code | Area | Bldg./MSIN No. |

PURPOSE: Each new employe should know and understand the "whole job" and its relation to our overall effort as completely and as quickly as possible. The following checklist is provided to assist in assuring these requirements are met as soon as possible. A position at this laboratory involves much more than the obvious physical and mental tasks. Available facilities and services – benefits and opportunities – training – productivity, and cooperation must be stressed. The first few days of employment are very critical in assuring the employe is made to really feel welcome and needed. The checklist also provides tracking for performance appraisals.

INSTRUCTIONS: Points on this checklist should be completed with the new employe as follows:

Part I and II should be completed for ALL new employes.

Part III to be completed by the immediate supervisor for nonexempt, nonbargaining unit employes at the end of the second and fourth month, respectively.

Part IV to be completed for bargaining unit employes at the end of six weeks and ten weeks.

Part V is reminder for supervisor to tickle dates for each appraisal.

NOTE: While all points are important they are not equal in importance. Additional time should be spent covering points as circumstances require.

## PART I PERSONNEL RELATIONS

| EMPLOYMENT ORIENTATION | Employe Initial as Completed |
|---|---|
| 1. Personal welcome to Westinghouse Hanford Company ☐ Department Location | |
| 2. ☐ Sign Up (All required forms) ☐ Conflict of Interest ☐ Patent Agreement ☐ Basic Insurance Plan | |
| 3. ☐ Medical Examination ☐ Radiation Exposure History | |
| ☐ United Way (Community Service) ☐ Savings Bonds ☐ Skills Inventory & Personal Data & History Forms | |
| 5. Employe Benefits: ☐ Insurance ☐ W Product Refunds ☐ Pension/Retirement ☐ Investment Plan ☐ Holidays ☐ Vacations ☐ Educational Assistance | |
| 6. Date of Employe Benefits Meeting ☐ Benefits Program Handbook | |
| 7. ☐ Probationary Period ☐ "Getting Ahead Within WHC" ☐ Employe Handbook | |
| 8. Security Information: ☐ Identification Badge ☐ PSQ | |
| 9. Pay Information: Confirmation of Starting Rate; Pay Periods ☐ Direct Check Deposit | |
| 10. Responsibility for Reporting Changes: (address, telephone number, number of dependents, marital status, name change, etc.) | |
| 11. General Information: ☐ Jury Duty ☐ Westinghouse Hanford News ☐ Bulletin Boards ☐ First Aid ☐ Recreational Activities ☐ Job Safety Film | |
| → HAVE ALL EMPLOYE'S QUESTIONS BEEN ANSWERED? (ASK) | |

Remarks:

BD-7100-022 (10-83)
DOE RL Richland, WA

FRONT OF SHEET

FIGURE H-1. NEW EMPLOYEE CHECKLIST

PART II IMMEDIATE SUPERVISOR *(Return promptly to Personnel (W/C 63) when this section is completed)*

| DEPARTMENT AND COMPANY POLICIES – GETTING STARTED ON THE JOB | Employe Init at Completion |
|---|---|
| 1. Welcome | |
| 2. Introduction to work station and fellow workers | |
| 3. Hours of work – this department | |
| 4. Lunch period | |
| 5. Restricted Areas | |
| 6. Leaving the Department during working hours | |
| 7. Reporting absence and tardiness; time cards, TDR's | |
| 8. Good housekeeping | |
| 9. ☐ EEO Policy ☐ Standards of Conduct | |
| 10. Parking facilities | |
| 11. Function of Department ☐ Organization ☐ Related Departments | |
| 12. How to get tools and supplies | |
| 13. Why position is important: ☐ Importance of regular attendance ☐ Importance of teamwork | |
| 14. Working procedures and responsibilities assigned | |
| 15. Safety: ☐ Safety Rules: ☐ Reporting Accidents and Injuries ☐ Emergency Procedures ☐ Medical Exams ☐ Job Safety Analysis ☐ Work Restrictions ☐ Health Hazards ☐ Operators Permits ☐ Hazardous Material ☐ Safety Equipment ☐ Industrial Safety Manual ☐ Mask Fitting if Required (per WHAN–M–8 Section 2.5.1) ☐ Dangerous Waste Handling ☐ Reporting of Unsafe Conditions ☐ Motor Vehicle Use ☐ Training ☐ Radiation Work Procedures ☐ ALARA ☐ Criticality Safety | |
| 16. Pay Information ☐ When ☐ From whom ☐ If absent on payday ☐ Overtime ☐ Merit/time progression increases | |
| 17. Career Development ☐ Promotional opportunities ☐ Educational assistance | |
| ——→ HAVE ALL QUESTIONS BEEN ANSWERED? (ASK) | |

## PART III PROGRESS REVIEW NONEXEMPT – NONBARGAINING UNIT EMPLOYE

| 2nd Month | ☐ Satisfactory ☐ Unsatisfactory | Employe should be: ☐ Retained ☐ Released | Supervisor (signature) |
|---|---|---|---|

Remarks:

*(Return to Personnel (W/C-63) when this section is completed)*

## PART III (Continued)

| 4th Month | ☐ Satisfactory ☐ Unsatisfactory | Employe should be: ☐ Retained ☐ Released | Supervisor (signature) |
|---|---|---|---|

NOTE: An overall performance review will be required at the end of the 6th month period for the nonexempt, non-bargaining unit employe. The necessary forms for this review will be distributed to the immediate supervisor at the appropriate time.

Remarks:

*(Return to Personnel (W/C-63) when this section is completed)*

## PART IV PROGRESS REVIEW – BARGAINING UNIT EMPLOYES

| 6 Weeks | ☐ Satisfactory ☐ Unsatisfactory | Employe should be: ☐ Retained ☐ Released | Supervisor (signature) |
|---|---|---|---|

Remarks:

*(Return to Personnel (W/C-63) when this section is completed*

## PART IV (Continued)

| 10 Weeks | ☐ Satisfactory ☐ Unsatisfactory | Employe should be: ☐ Retained ☐ Released | Supervisor (signature) |
|---|---|---|---|

NOTE: New bargaining unit employes shall be considered probationary employes for a period of three (3) months, exclusive of time off the active payroll. An overall evaluation will be required at the end of the third month. The necessary forms will be distributed to the immediate supervisor at the appropriate time

Remarks:

*(Return to Personnel (W/C 63) when this section is completed)*

## PART V PERFORMANCE REVIEW – EXEMPT EMPLOYE

☐ 3 Months ☐ 6 Months ☐ Annually (Supervisor will be sent appraisal forms by PR)

BACK OF SHEET

# APPENDIX H-1

## PERSONNEL JOB DESCRIPTIONS FOR 3718-F ALKALI METAL TREATMENT FACILITY, 105-DR LARGE SODIUM FIRE FACILITY, 221-T CONTAINMENT SYSTEMS TEST FACILITY, AND MASF - MAINTENANCE AND STORAGE FACILITY

NOTICE

These Manuals, Plans or Procedures are provided as examples and are subject to change. Current copies can be obtained by contacting the Manager of Waste Systems Engineering for the Westinghouse Hanford Company.

3718F

# Position Description - Waste Systems Operations Supervisor

This position description is specific to a Waste Systems Operations Supervisor and is not meant to conflict with the WHC Standard Supervisor description. In the event of conflict, the WHC description will take precedence.

1. Supervise the operations and maintenance of Radioactive and Hazardous Waste Disposal Systems in support of laboratories and test facilities and provide expertise in Nuclear Waste Management. This includes the disposal of solid and liquid radioactive and hazardous wastes in conformity with establishing codes and regulations.

2. Supervise technicians employed in operation of Radioactive and Hazardous Disposal Systems and decontamination of materials and equipment associated with the Waste Systems Operations.

3. Assist in analyzing contaminated and hazardous waste flows and respective costs.

4. Assist in analyzing waste problems and advise customers concerning codes, regulations techniques, procedures, limitations, specifications and related technology applying to disposal and decontamination of radioactive materials and other materials such as beryllium, mercury, sodium and hazardous chemicals.

5. Assign work consistent with the terms of the Westinghouse-HAMTC agreement and jurisdictional settlements.

6. Meet established goals in the areas of Equal Employment Opportunity, safety and productivity improvement.

7. Provide the specialized training of waste handling technicians required in the laboratories and test facilities.

8. Provide tools, materials and procedures to effectively accomplish assigned work.

9. Maintain and control assigned government property and meet established security requirements.

10. Qualification Requirements
    Qualify and Annual requalification in:
    - Radiation Worker and Controls
    - Hazardous Material Shipping & Handling (Radioactive & Nonradioactive)
    - WSO Operation
    - AMTF Operation
    - SNM Custodian
    - Criticality Representative
    - Facility Administrator

11. Regular duties
    - Plan and schedule work load
    - Assign work
    - Recommend budgets
    - Control expenditures
    - Maintain morale of subordinates
    - Review performance of subordinates
    - Report results and unusual situations to immediate supervisor

12. Maintain WSO Operations and records and disposal documentation in an audible manner.

# Position Description - Waste Systems Operations Clerk

This position description is specific to a Waste Systems Operations Clerk and is not meant to conflict with the WHC Standard Clerks description. In the event of conflict, the WHC description will take precedence.

I. Prepare computer input data routinely following prescribed format(s).

Specific computer operations are:

1. Input each Waste Control Form into the computer by shipment/solid waste burial number.
2. Fill out Solid Waste Burial Record for each shipment/contractor, including summary information at the end of each entry session for a shipment. (Zero error is required for shipment records are audited by security and RHO).
3. Run WSTCNT/BAS. This program processes keyboard input and sets up disc files for each Solid Waste Burial Record. Prints information required for the Solid Waste Burial Record on the CRT screen.
4. Run RPLOG/BAS. This program uses the WSTCNT/BAS files to sort, sum data, make up print files and print out two tables for the Dry Waste Pickup Log.
5. Run line printer to obtain two complete sets of Dry Waste Pickup Log information. One set is attached to the Standard RSR for each shipment and the second set is to be filed with the shipment records.
6. Run "initialize" computer program to transfer information to the backup disc for permanent storage.
7. Run NPRC/BAS. This program sorts and sums NCMB/BAS file information to produce files containing cubic feet of Non Tru, Uranium and TRU waste for each work order or cost code for monthly and continuous accumulative totals for each contractor.
8. Run CKPCT/BAS. This program prints the NPRC/BAS program with proper headings, in the proper order and gives total cubic feet by work order or cost code with a grand total for the month.
9. Run NPRT/BAS. This program produces files of data for waste types and volumes by building and cost code or work order.
10. Run CKPRT/BAS. This program prints the NPRT/BAS program with proper headings, in the proper order and gives total cubic feet by building and work order or cost code with a grand total for the month.
11. Move NCMB/BAS. Four files per month to a accumulative disc for the Fiscal Year. Follows steps 7 thru 10 to arrive at a running total for the Fiscal Year. Separate discs and reports for each contractor, WHC, PNL.

II. Prepare Monthly Billing Information

1. Check computer reports for accuracy of buildings and cost codes.
2. Gather information needed for the DLE meeting.
   a. Total volume of waste - liquid & solid
   b. Special jobs performed during the month.

III. Hazardous Waste

1. Assign Request Number to Request To Dispose of Nonradioactive Hazardous Waste Form. Setup file folders.

III. Hazardous Waste - continued

2. Run Hazardous Waste Program - VISCAL PROGRAM
3. Enter Request To Dispose Of Nonradioactive Hazardous Waste Form information
4. Print out hardcopy report.

IV. Maintain graphs and charts relative to waste volume and exposure.

V. Keep track of work orders, supplements, unmatched reports.

VI. Type correspondence, reports, procedures and other administrative technical documents; establish and maintain files, logs and other records, open, sort prioritize and distribute mail, make meeting arrangements; maintain supervisors appointment schedule. Answer phones, contact technical personnel for various system slarms and failures. Operate terminal and line printer to process and retrieve WSO data.

VII. Qualification Requirements

1. Qualify and maintain qualifications as a Radiation Worker.
2. Perform as the 340 Alternate Building Emergency Director.
3. Qualify on the TRS-80. In addition to the operation of the computer, must understand all Waste Systems Operations forms, regulations and limits to enter correct data into the computer system.

## Position Description - Waste Systems Operations Technician

This position description is specific to a Waste Systems Operations Technician and is not meant to conflict with the WHC Standard Technician description. In the event of conflict, the WHC description will take precedence.

1. Handling and processing radioactive, hazardous and solid waste.
   Major duties are:
   - pickup various types of waste at the 300 and 400 Areas
   - perform glovebox work
   - maintain waste records and disposal documentation for the respective types of waste
   - prepare hazardous waste, (radioactive and nonradioactive for disposal)
   - operate lifting devices and vehicles for waste transportation

2. Handling and processing liquid waste.
   Major duties are:
   - sample liquid for chemical analysis and calculate fissile content
   - operate WSO piping and valving net work (RLWS & RPS)
   - maintain liquid waste records and disposal documentation
   - prepare liquid waste for disposal

3. Decontamination Services.
   Major duties are:
   - manually decontaminate small casks, equipment and laboratory dishware

4. Special Nuclear Materials Accountability (SNM)
   Major duties are:
   - maintain transfer records and use computer for accountability
   - Prepare TRU Waste for shipment

5. Fabricate Special Plastic Bags and Greenhouses.
   Major duties are:
   - Operate plastic sewing machine and plastic sealers
   - Fabricate bags and greenhouses per customers specifications.

6. Alkali Metal Facility Facility (AMTF)
   Major duties are:
   - prepare alkali metal for disposal
   - operate Burn Facility
   - operate Melt Station
   - maintain records and disposal documentaion
   - maintain AMTF Qualification

7. Qualification Requirements
   Qualify and Annual requalifications in:
   - Radiation Worker & Control
   - Hazardous Material Shipping & Handling (Radioactive & Nonradioactive)
   - WSO Operation
   - AMTF Operation
   - SNM Custodian

8. On occasion, assume the duties of the WSO Supervisor during his/her absence.

9. Prepare and update Standard Operating Procedures and specific job related Job Safety Analysis.

10. Recommend methods to improve efficiency or safety.

11. Perform inspections and tests using standard and specific methods, procedures and equipment relating to waste handling treatment and shipping.

12. Perform field surveillance of WSO equipment and systems operations and respond and recover from abnormal or emergency operations and situations.

105DR and 221T

# Job Description

## Title

Technician/Operator - Containment Systems Test Facility and Large Sodium Fire Facility

## Responsibilities

### A. Chemistry Lab Operation

1. General Lab Operation
   - Keep lab clean and operational.
   - Stock lab with supplies and materials.
   - Keep samplers clean and in good condition and repair.
   - Order sampler filters and spare parts.

2. Pre-Test Operation
   - Pre-weigh filters; mark and record data.
   - Clean samplers; wash, dry and assemble.
   - Establish and maintain sample stations; supplies, materials, and operation.

3. Test Operation
   - Collect samples from stations.
   - Disassemble samplers, weigh filters, bottle and mark filters, record results and perform calculations.
   - Clean and reassemble samplers as required.
   - Package and ship samples to 300 Area Chemistry Lab.
   - Follow 300 Area Chemistry Lab work, obtain results, provide to engineers, record results and perform calculations.

4. Post-Test Operation
   - Clean up lab.
   - Clean samplers; wash, dry.

### B. Facility Operation

1. Become Qualified CSTF and LSFF Operator.
   - Individual procedure study.
   - On-the-job training; work with qualified operator to operate each system.
   - Written and oral exams on each system.
   - Final system operation.

2. Become Qualified Sodium Systems Operator ;and Sodium Materials Handler
   - On-the-job training.
   - Informal HEDL classes.
   - Perform pre-test set up of sodium systems.
   - Perform post-test cleanup of sodium/caustic materials.
   - Handle caustic materials in laboratory.

3. Supervise Crafts
   - Understand and be familiar with facility and test requirements.
   - Identify quantity and types of crafts required to complete job.

- Schedule crafts for job completion.
- Supervise crafts to assure timely, correct job completion.

C. Other
1. Assist engineers with data recording, reduction, and analysis.
2. Assist with CSTF facility cleanup and housekeeping.

Special Requirements

A. Sodium Material and Systems; Caustic Materials Handling and Environments

Trained to use:
- Self contained and emergency breathing devices.
- Acid suits and protective clothing for caustic material.
- Emergency extinguishment and control procedures for liquid metals.
- Caustic materials in laboratory.

B. Radiation Zones

- Familiarity with and follow standard radiation work procedures.
- Not work with radioactivity, but work in previous radiation areas.

C. Shift Work, Overtime

- Normal 8-hour work days; 7:30 a.m. to 4:00 p.m.
- During tests, 12-16 hour shifts (no more than 5 days at a time, no more than once a month).

D. Work Location

- Assigned to 200W Area.
- Facilities: CSTF at 221T, LSFF at 105DR.
- Bus transportation provided at cost, or use private transportation to and from 200W Area. Bus transportation available for regular shifts.

MASF

SALARY POSITION DESCRIPTION
WESTINGHOUSE FORM 28255F

| POSITION TITLE | | | |
|---|---|---|---|
| | TECHNICIAN - GRADE 10 | | |
| PLANT: Westinghouse Hanford Company | POSITION NO.: 510 A | | |
| DEPARTMENT: General | DATE ORIG. DESCRIPTION: December 1977 | REVISION NO.: 3 | DATE: March 1984 |

PRIMARY FUNCTION:

Perform standard technically related tasks requiring an understanding of the principles of a technology involving a sequence of related operations.

WORKING PROCEDURE AND/OR RESPONSIBILITY ASSIGNED:

*THE FOLLOWING ARE THE USUAL MAJOR JOB DUTIES BUT THIS JOB DESCRIPTION DOES NOT PRECLUDE THE PERFORMANCE OF OTHER DUTIES BY THE INCUMBENT, NOR THE QUESTION BEING RAISED ON THE PROPER RATE OF PAY FOR THE ASSIGNMENT.*

Perform duties of TECHNICIAN-GRADE 6 and, in addition, perform duties of a level of complexity typified by the following:

1. Perform duties related to the non-routine modification, assembly, and/or operation of developmental or prototypical equipment, facility systems or processes; operate standard laboratory, facility/operational systems, or process equipment in accordance with established procedures; perform monitoring and routine inspection of equipment or process function.

2. Set up and conduct non-routine laboratory tests, following instructions which specify conditions and techniques; prepare samples following instructions given in terms of end product desired; assemble data into graphic or tabular form to assist engineers in preparation of material for reports; perform mathematical calculations following existing formulae; compile and process data as directed following established methods; use standard mathematical tables.

3. Assemble or modify simple experimental instruments, devices and equipment to adapt apparatus to test conditions and requirements; operate standard laboratory equipment and instruments.

4. Perform in-process inspection and verify acceptability of components; perform routine set-up and dimensional inspections using complex and special purpose equipment; interpret complex drawing requirements involving an understanding of true position and geometric tolerancing; analyze data for characterization of components.

5. Operate computer equipment for routine data processing or calculations; operate and monitor computer-controlled equipment.

(CONTINUED ON REVERSE SIDE)

| DEPARTMENT | POSITION TITLE | POSITION NO. |
|---|---|---|
| General | TECHNICIAN - GRADE 10 | 510 A |

SCOPE, PURPOSE AND FREQUENCY OF CONTACTS:

| | | |
|---|---|---|
| Engineers/ Scientists | Frequent | Receives instruction on new assignments and discusses techniques and interpretation of assignments with higher classified personnel. |
| Other Technicians | Frequent | Same as above and to clarify work assignments; occasionally guides lower classified technicians. |
| Technical Services | Occasional | As required to follow assigned projects. |

DIRECTION OF OTHERS:

May occasionally provide technical direction to lower classified technicians and/or crafts as required.

DIRECTION RECEIVED:

Performs work under general supervision following established procedures and methods. Receives detailed instructions from higher classified technicians, engineers, scientists, or supervisor on new or unusual assignments. New and/or special work is subject to frequent checks.

EDUCATION REQUIREMENT:

High school education or equivalent plus two years of post high school education in an engineering, scientific or technical discipline or the equivalent in experience.

EXPERIENCE REQUIREMENT:

Minimum of one year of laboratory experience as a TECHNICIAN-GRADE 6 or the equivalent in a directly related capacity. Additional related post high school technical education may be substituted for a portion of the required experience.

APPROVALS

| ANALYST | DATE | DEPT. MGR. | DATE | IND. REL. MGR. | DATE | DIV. OR PLANT MGR. | DATE |
|---|---|---|---|---|---|---|---|
| [illegible] | 2-7-84 | | | [illegible] | 3/1/84 | [illegible] | 3/1 |

WESTINGHOUSE FORM 29255F (BACK)

SALARY POSITION DESCRIPTION
WESTINGHOUSE FORM 28255F

| | | | |
|---|---|---|---|
| POSITION TITLE: TECHNICIAN - GRADE 12 | | | |
| PLANT: Westinghouse Hanford Company | POSITION NO.: 512 A | | |
| DEPARTMENT: General | DATE ORIG. DESCRIPTION: December 1977 | REVISION NO.: 2 | DATE: March 1984 |

PRIMARY FUNCTION:

Perform a variety of technical assignments requiring a high level of technical knowledge or skill, selecting and following standard procedures and methods to meet objectives.

WORKING PROCEDURE AND/OR RESPONSIBILITY ASSIGNED:

*THE FOLLOWING ARE THE USUAL MAJOR JOB DUTIES BUT THIS JOB DESCRIPTION DOES NOT PRECLUDE THE PERFORMANCE OF OTHER DUTIES BY THE INCUMBENT, NOR THE QUESTION BEING RAISED ON THE PROPER RATE OF PAY FOR THE ASSIGNMENT.*

Perform duties of TECHNICIAN-GRADE 10 and, in addition, perform duties of a level of complexity typified by the following:

1. Perform duties requiring a high degree of technical knowledge related to the modification, assembly, testing and/or operation of developmental or prototypical equipment, facility/operational systems, or process equipment; maintain familiarity with technical specifications and procedures relevant to assigned systems and equipment; may assist in writing operating/test procedures.

2. Set up and perform specialized laboratory tests, selecting method or process needed to obtain specified data; evaluate method used to obtain data; extract data and assemble into graphic, tabular or written form for formal presentations; perform calculations from existing formulae which may require the application of algebra, geometry and/or trigonometry; perform routine analysis to check accuracy and reasonableness of data.

3. Assemble, test, calibrate and operate standard experimental, measurement, and test equipment; construct experimental components or simple models; adjust and modify special purpose laboratory equipment following drawings, diagrams or instructions.

4. Perform complex inspections and tests using standard and specific methods, procedures and equipment covering the field of mechanical and electrical measurements; evaluate and calibrate test and measurement equipment; evaluate data, prepare and issue detailed inspection reports; perform field surveillance of inspection and manufacturing operations. Verify and document acceptability of components and assemblies.

5. Conduct routine data processing and computer calculations; operate, monitor, and re-program computer-controlled or computer-monitored equipment.

(CONTINUED ON REVERSE SIDE)

| DEPARTMENT | POSITION TITLE | POSITION NO. |
|---|---|---|
| General | TECHNICIAN - GRADE 12 | 512 A |

SCOPE, PURPOSE AND FREQUENCY OF CONTACTS:

| | | |
|---|---|---|
| Engineers/ Scientists | Frequent | Receives instruction on new assignments and exchanges information which may require an explanation of previous assignments. |
| Other Technicians | Frequent | Explains work and instructs lower classified technicians in work procedure; discusses techniques and interpretation of assignments with higher classified technicians. |
| Technical Services | Occasional | As required to follow assigned projects. |

DIRECTION OF OTHERS:

May provide technical direction to lower classified technicians and/or crafts as required.

DIRECTION RECEIVED:

Performs work under limited supervision following established procedures and methods. Receives instructions from higher classified technicians, engineers, scientists, or supervisor on new or unusual assignments. New and/or special work may be subject to review by higher classified personnel.

EDUCATION REQUIREMENT:

High school education or equivalent plus two years of post high school education in an engineering, scientific or technical discipline or the equivalent in experience.

EXPERIENCE REQUIREMENT:

Minimum of three years of laboratory experience, of which at least two years is as a TECHNICIAN-GRADE 10 or the equivalent in a directly related capacity. Additional related post high school technical education may be substituted for a portion of the required experience. Must demonstrate a knowledge of laboratory procedures, techniques, equipment and operations in assigned technical areas.

APPROVALS

| ANALYST | DATE | DEPT. MGR. | DATE | IND. REL. MGR. | DATE | DIV. OR PLANT MGR. | DA |
|---|---|---|---|---|---|---|---|
| [illegible signature] | 3-2-84 | | | [illegible signature] | 3/2/84 | [illegible signature] | |

WESTINGHOUSE FORM 28255F (BACK)

| DEPARTMENT | POSITION TITLE | POSITION NO. |
|---|---|---|
| General | SENIOR TECHNICIAN - GRADE 14 | 514 A |

SCOPE, PURPOSE AND FREQUENCY OF CONTACTS:

| | | |
|---|---|---|
| Engineers/ Scientists | Frequent | Receives information on new assignments and exchanges information which may require an explanation of previous assignments. |
| Other Technicians | Frequent | Explains work and instructs lower classified techncians in work procedures; discusses techniques and interpretation of assignments with higher classified technicians. |
| Technical Services | Frequent | As required to complete assigned projects. |
| External | Occasional | As required to complete assigned projects. |

DIRECTION OF OTHERS:

Frequently provides technical direction to lower classified technicians and/or crafts.

DIRECTION RECEIVED:

Performs most assignments with a minimum of direction and supervision following accepted methods and procedures after being given an understanding of expected results. May recommend modifications to existing procedures as required to meet requirements and objectives.

EDUCATION REQUIREMENT:

High school education or equivalent plus two years of post high school education in an engineering, scientific or technical discipline or the equivalent in experience.

EXPERIENCE REQUIREMENT:

Minimum of five years of laboratory experience, of which at least two years is as a TECHNICIAN-GRADE 12 or the equivalent in a directly related capacity. Additional related post high school technical education may be substituted for a portion of the required experience. Must demonstrate a knowledge of laboratory procedures, techniques, equipment and operations in assigned technical areas.

APPROVALS

| ANALYST | DATE | DEPT. MGR. | DATE | IND. REL. MGR. | DATE | DIV. OR PLANT MGR. | DATE |
|---|---|---|---|---|---|---|---|
| [illegible signature] | 3/1/94 | | | [illegible signature] | 3/1/94 | [illegible signature] | 4/1 |

| SALARY POSITION DESCRIPTION<br>WESTINGHOUSE FORM 28255F | POSITION TITLE<br>SENIOR TECHNICIAN - GRADE 14 | | |
|---|---|---|---|
| PLANT<br>Westinghouse Hanford Company | POSITION NO.<br>514 A | | |
| DEPARTMENT<br>General | DATE ORIG. DESCRIPTION<br>December 1977 | REVISION NO.<br>2 | DATE<br>March 1984 |

PRIMARY FUNCTION:

Perform a variety of non-routine, complex, or highly skilled technical assignments selecting and adapting standard procedures, methods or equipment to meet objectives and project requirements.

WORKING PROCEDURE AND/OR RESPONSIBILITY ASSIGNED:

*THE FOLLOWING ARE THE USUAL MAJOR JOB DUTIES BUT THIS JOB DESCRIPTION DOES NOT PRECLUDE THE PERFORMANCE OF OTHER DUTIES BY THE INCUMBENT, NOR THE QUESTION BEING RAISED ON THE PROPER RATE OF PAY FOR THE ASSIGNMENT.*

Perform duties of TECHNICIAN-GRADE 12 and, in addition, perform duties of a level of complexity typified by the following:

1. Perform duties of a complex nature related to the modification, assembly, testing, and/or operation of developmental or prototypical equipment, facility systems or processes; operate advanced laboratory/operational equipment, facility or process systems; write operating and test procedures as directed; maintain knowledge of advanced technical specifications and procedure changes in area of responsibility.

2. Perform specialized laboratory tests, modifying equipment or methods to simulate special conditions; select,apply and evaluate known and new experimental methods or data extraction techniques; evaluate and analyze data and prepare test reports; maintain master data log or notebook, perform mathematical calculations which may include the use of calculus; demonstrate proficiency in the use and application of computer systems.

3. Assemble, test, adjust, calibrate and operate specialized laboratory equipment; modify equipment or experiments, following drawings or technical advice, to achieve desired results; develop laboratory equipment, system set-ups and equipment operating procedures.

4. Develop inspection methods,techniques and operating procedures within area of responsibility; perform quality assurance overview of technology programs, including direct responsibility for surveillance and inspection/audit of a specific development program.

5. Make calculations and summarize computer data to validate layout, systems parameter and design, with considerations given to performance, reliability, maintainability and cost criteria; conduct analysis of major components, sub-systems, and major physical science systems; may employ computer programs utilizng advanced analytical and systems techniques for data analysis.

(CONTINUED ON REVERSE SIDE)

APPENDIX H-2

WASTE MANAGEMENT MANUAL MG-75
AND ENVIRONMENT PROTECTION MG-99

## 6.1 DEFINITIONS

### Process Waste

Cooling water, process water, and other nonsanitary waste water which contains no radioactive materials other than trace amounts of uranium or materials designated dangerous by MG-99.

### Diversion Process Waste or Retention Process Waste

Laboratory waste that contains no materials designated dangerous by MG-99 and is normally uncontaminated by radionuclides but that has a potential for such contamination. If radioactivity in this waste exceeds $5 \times 10^{-5}$ µCi/ml, the waste is automatically routed to the Radioactive Liquid Waste System.

### Radioactive Liquid Waste

Liquid waste containing radioactivity in excess of $5 \times 10^{-5}$ µCi/ml.

## 6.2 EQUIPMENT AND FACILITIES

### 6.2.1 Non-Radioactive Systems

Most facilities in the 300 Area are served by sanitary and process sewers. Since these systems are not radioactive liquid waste systems, it is important that they be given consideration in planning experimental work and processes to ensure that no radioactive materials are discharged to them, either intentionally or unintentionally. Care must be taken to avoid any possibility of contaminated or potentially contaminated waste entering these systems. Additionally, care must be taken to ensure materials designated dangerous by MG-99 do not enter these systems.

6.2 EQUIPMENT AND FACILITIES (continued)

Sanitary sewage is collected in a separate sewer system which is connected to all 300 Area buildings with restrooms, change rooms, and toilet facilities. The sewer pipes form a network which delivers sewage to septic tanks with a total volume of 95,000 gallons. The septic tank effluent is sampled by a composite sampler, chlorinated, and discharged to one of two 600-foot-long by 10-foot-wide leaching trenches. Liquid percolates into the ground from the trenches which are within approximately 500 feet from the Columbia River.

Flow through the sanitary sewer system varies from less than 300,000 gpd in the winter to over 600,000 gpd in the summer. Sewage flow is measured by a weir and recorder located just downstream of the septic tanks.

The trunk lines of the sanitary sewer system are shown in Figure 6-1.

Process sewage is cooling water, process water, and other nonsanitary waste which does not contain significant quantities of radioactive materials or materials designated dangerous by MG-99. Most facilities in the 300 Area with significant quantities of process and cooling water are connected to a process sewer system which discharges into one of two 1,500-foot-long disposal trenches. Process flows are sampled by a composite sampler and measured by a weir and integrating flow recorder. Flow to the trenches averages approximately 2.5 million gpd. Water enters the ground through percolation. Oil baffles in the influent flume permit recovery of spilled oil.

The east bay of the south process pond is now used for disposal of filter backwash water from the 300 Area water treatment plant. Flows average about 30,000 gpd, flowing by gravity through an 18-in. line from the 315 Building to the south pond. Water enters the ground through percolation.

The 300 Area Process Sewer lines are shown in Figure 6-2.

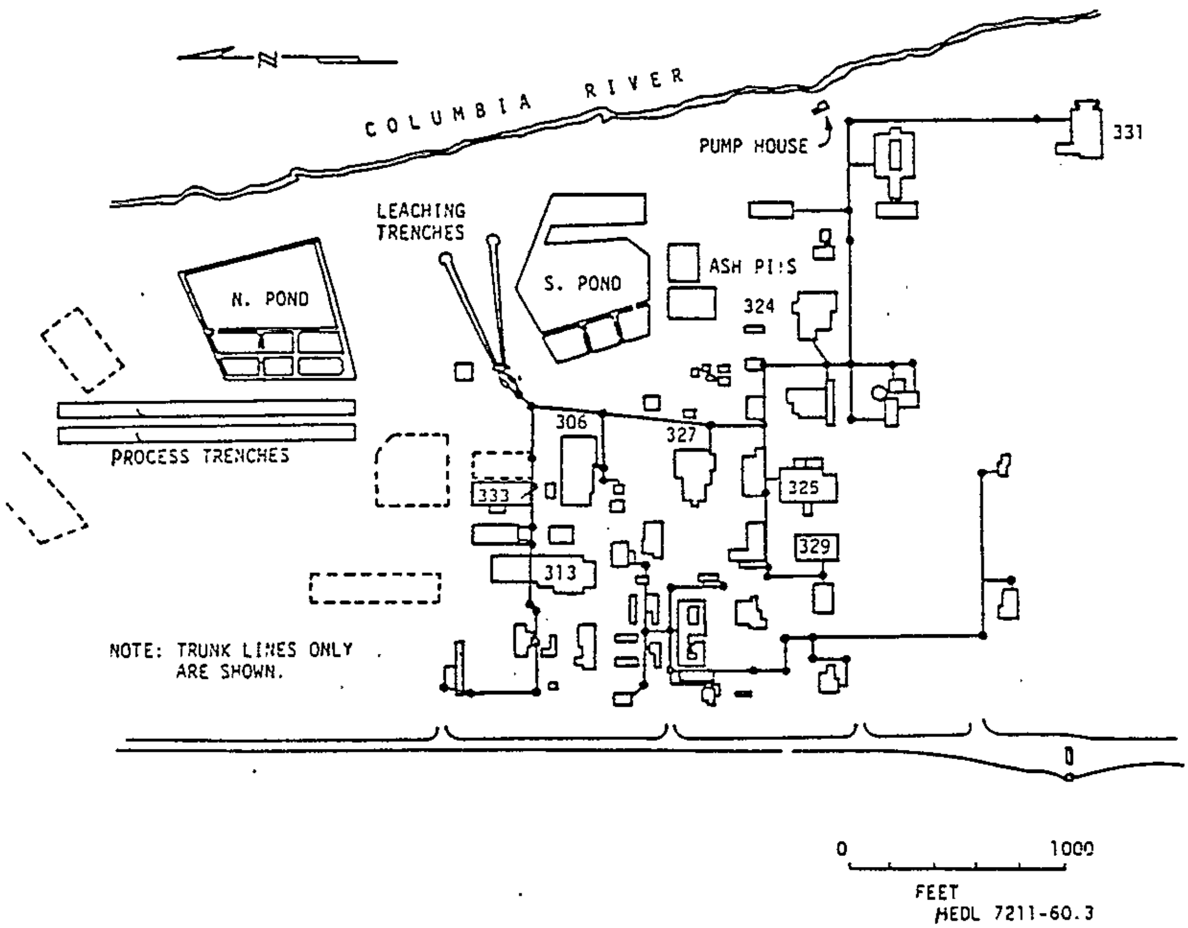



FIGURE 6-1. .300 Area Sanitary Sewer System.

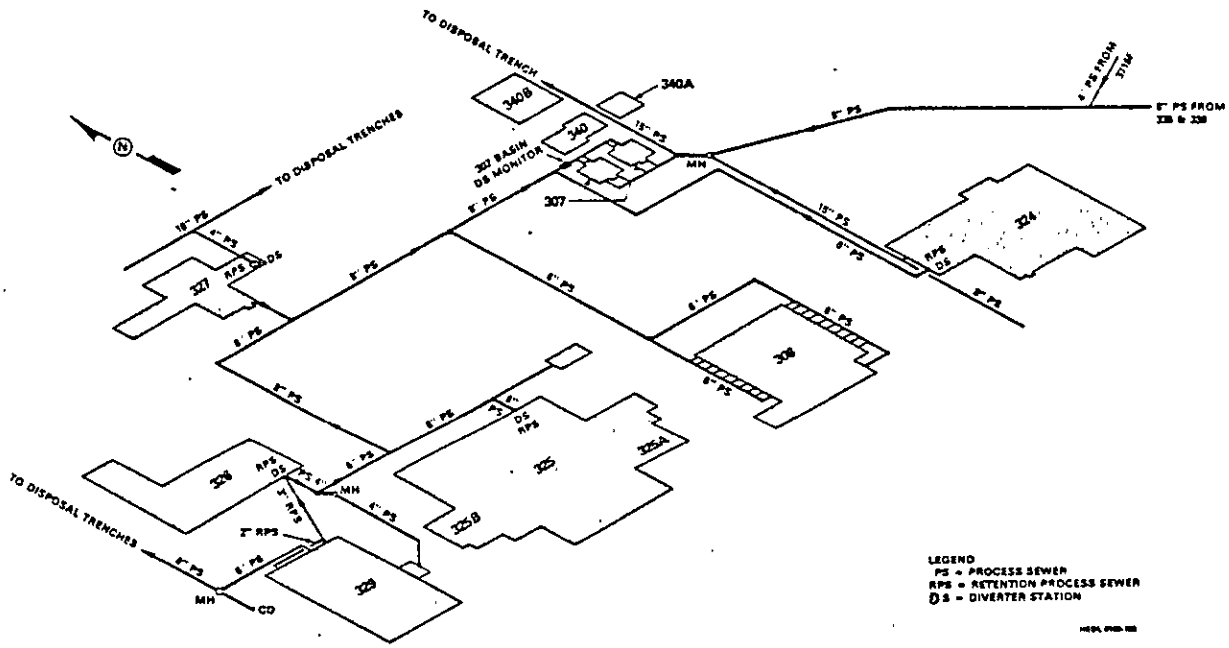



FIGURE 6-2. 300 Area Diversion Waste Sewer (Retention Process Sewer) and Process Sewer.

6.2 EQUIPMENT AND FACILITIES (continued)

6.2.1 400 Area Sanitary Sewer System

The 400 Area Sanitary Sewer System consists of 6, 8, 10 and 12-inch PVC or vitrified clay pipe mains, 18 manholes, a septic tank and dosing chamber and a leach field. The septic tank, dosing chamber and drain-field were installed as part of a FY1977 General Plant Project (V-656, Sanitary Sewer Modifications and Process Sewer System Installation).

The septic tank facility is multiple compartment type reservoir constructed of reinforced concrete and is located approximately 600 feet north of the 400 Area perimeter fencing. Raw sewage is collected by a distribution system in the 400 Area and is delivered to the septic tank via a 12-inch sewer main. The spectic tank is designed to collect approximately 60,000 gallons per day and was combined with a 2,500 gallon dosing chamber to provide surge flows to the drainfield. The dosing chamber is designed to be used also as a flow measuring device by monitoring a built-in dose counter.

The drainfield is located approximately 1,700 feet north of the 400 Area. The sub-system is constructed of 800 linear feet of 4-inch perforated PVC pipe set in multiple gravel trenches. Sewage effluent is delivered to the fiel via an 8-inch pipe from the dosinng chamber. Uniform distribution of effluent throughout the drainfield was to be provided by large surges of flow from the dosing chamber.

6.2.2 Diversion Waste System (DWS) or Retention Process System

Laboratory buildings in the 300 Area with a waste stream that could, by human error or equipment failure, become radioactively contaminated have been equipped with diverter stations. These diverter staions consist of

6.2 EQUIPMENT AND FACILITIES (continued)

counting instruments and automatically operated valves which divert the liquid flow from the Process Sewer into the Radioactive Liquid Waste System and initiate alarms in the 325 Bldg. East Equipment room if the radioactivity exceeds the preset level of $5 \times 10^{-5}$ µCi/ml. The 325 A and 324 Bldg. DWS diverts to a holding tank, then into the RLWS line. The systems in the buildings, upstream of the diverter stations, comprise the Diversion Waste System (Retention Process System). Downstream of the diverter stations is the Process Sewer. (See Figure 6-2.)

The portion of the Process Sewer which serves Buildings 324, 325, 326, 327, and 329, downstream of their diverters and lines from Buildings 308 and 309, which have no diverters, discharge into one of four 50,000-gallon concrete basins, the 307 Retention Basins. Two of these basins are provided with a coal tar epoxy coating to simplify decontamination if required. The other two have bare concrete surfaces and are used only in case of emergency.

The 307 Basins are equipped with an in-line $\beta/\gamma$ detector which continuously monitors the waste stream before it enters the basin. An alarm is initiated in the 325 Building East Equipment Room, and the automatic basin discharge pump is deactivated when a radionuclide concentration above $5 \times 10^{-5}$ µCi/ml is detected.

The first two basins are provided with a series of baffles which form a serpentine flow path. The flow through the basin by the serpentine route is long enough to allow a counting interval for the discharge pump to be shut down before contaminated liquid escapes from the basin. When no radioactivity is detected, the contents of the basin are automatically discharged to the Process Trenches. A continuous sampler is provided upstream of the basins to collect an integrated sample for laboratory analysis.

6.2 EQUIPMENT AND FACILITIES (continued)

6.2.3 Radioactive Liquid Waste System (RLWS)

The Radioactive Liquid Waste System collects radioactively-contaminated liquid waste from a limited number of sinks and drains in Buildings 324, 325, 326, 327, and 329 into a network of stainless steel piping that leads to the 340 Building. The stainless steel piping is enclosed in fiberglass-reinforced plastic. At the 340 Building, the contaminated waste is stored in tanks, neutralized with sodium hydroxide, and pumped into railroad tank cars for shipment to the 200 Area waste treatment facility. The 309 Building TW tanks are connected to the 340 Facility through a direct-buried carbon steel line.

Two 15,000-gallon stainless steel tanks are located in the 340 underground vault. These tanks are equipped with agitators for use during neutralization. The tanks are also equipped with automatic pumps and valving for lifting the waste to six 8,000-gallon stainless steel tanks located in a nearby metal-walled building (340-A Building). The railroad tank cars are located in another nearby metal-walled building (340-B Building) which is equipped with loadout facilities. Auxiliary equipment, such as caustic pumps, a caustic storage tank, a filtered off-gas vent system, air compressors for air-operated instrumentation, air sampling system, liquid sampler, and radiation detectors are also provided in the 340 Facility.

Waste Management has at its disposal two stainless steel 20,000-gallon, and one 8,000 gallon railroad tank cars for shipment of radioactive liquid waste from FFTF and MASF. A loading station is provided in 340-B Building. Two other 20,000-gallon tank cars, normally used by UNC, are available in an emergency to provide additional hauling capacity.

Heavily shielded "bowling ball" casks are available for shipment of liquid which is too radioactive for acceptance in the RLWS.

6.2 EQUIPMENT AND FACILITIES (continued)

RHO operates an evaporation facility in which the radioactive liquid waste from the 300 Facility is concentrated before being stored in underground tanks. Operating conditions in this facility require that all waste shipped from the 300 Area in tank cars be adjusted to pH 12 or greater before shipment. This neutralization is accomplished in the 340 Building underground tanks.

## 6.3 CRITERIA FOR DISPOSAL

### 6.3.1 Sanitary Sewer

The Sanitary Sewer is the accepted system for disposal of liquid wastes from kitchens, lunch rooms, janitor closets, and drinking fountains. No radioactive or hazardous waste may be discharged into this system. This is the proper system for the disposal of janitorial chemicals that are being used in the manner for which they are designed. (Excess janitorial chemicals should not be put in any sewer unless MG-99 deems their constituents as not dangerous.) These wastes should be flushed into the Sanitary Sewer with copious amounts of water. Floor service water from controlled labs should be discharged to the Sanitary Sewer, provided that the floors were properly surveyed for radioactivity before application of the solution.

### 6.3.2 Process Sewer

Laboratory and process liquid aqueous wastes which do not contain radionuclides in excess of $5 \times 10^{-5}$ µCi/ml or materials deemed dangerous by MG-99 should be discharged to this system.

### 6.3.3 Diversion Waste System (DWS) or Retention Process System

This system should be used only for wastes which are not deemed dangerous by MG-99 and do not contain radioactivity but which come from a location in which

6.3 CRITERIA FOR DISPOSAL (continued)

such waste could become radioactively contaminated by mechanical failure or human error. If radioactivity in this system exceeds $5 \times 10^{-5}$ μCi/ml, the liquid in the system will be diverted to the Radioactive Liquid Waste System.

6.3.4 Radioactive Liquid Waste System (RLWS)

Concentrations of gamma emitters up to 10 μCi/ml or total activities below 40 curies per month are within the normal operating conditions of the system. Larger amounts may result in excess radiation levels. Alpha and beta emitters in excess of 0.1 μCi/ml or in excess of one curie per month may cause serious contamination problems.

Oils and other organic materials which are immiscible with water, materials which may solidify, precipitate, or coagulate in the waste stream, and wastes containing significant non-colloidal solids must not be placed into the RLWS. Acetone in concentrations exceeding 5% at the point of entry may produce explosive gas concentrations and are excluded from the system.

Small quantities of radioactive liquid wastes, aqueous or organic, can be solidified by absorption in solid medium and then disposed of as solid waste. When this method is used, care must be taken to ensure that the amount of absorbent is sufficient so that no liquid will drain from the absorbent. Waste Systems Operations will assist in packaging such material, if requested.

Liquid wastes exceeding normal levels for alpha-emitters in the RLWS require special handling. If it is determined that they cannot be allowed in the RLWS, there is no liquid waste system into which they can be

6.3 CRITERIA FOR DISPOSAL (continued)

placed. If the quantities of such waste are too large to permit absorption and burial as solid waste, a chemical separation may be necessary to remove the alpha emitters from the waste and bring it within the criteria of the RLWS.

Liquid wastes exceeding normal levels for gamma emitters for the RLWS may be accepted on a scheduled basis, if such scheduling ensures acceptable exposures to personnel. Otherwise, such waste must be transported to RHO in special shielded casks.

In order to protect personnel, equipment, and the environment from contamination and excess radiation, it is important that close communication be maintained between the laboratory personnel and Waste Systems Operations (WSO) personnel. Factors of concern are volumes, dose rates from gamma emitters, and contamination potential from alpha and beta emitters. It is important that WSO be informed of any planned significant change in any of these factors.

To ensure safe and uninterrupted operation of the RLWS, the following controls must be exercised:

- Only personnel trained in use of the RLWS shall dispose of liquids into the RLWS in each building. This training is received in the Radiation Worker's course.
- Only liquids are to be placed in the system.
- Liquids with solids suspended should be allowed to settle; then the liquid may be decanted off or filtered and the solids disposed of as solid waste.
- Mixtures or solutions that may precipitate solids out when proper chemical conditions are reached should be tested for precipitation in water before placing in the RLWS. If there is some question, contact Waste Systems Operations for consultation.

6.3 CRITIERIA FOR DISPOSAL (continued)

- No liquids may be placed in the RLWS that have a possibility of solidifying in the line. Examples are: paint, plastics, liquid rubber, epoxy, etc.
- Water insoluble solvents must not be placed in the system. These should be absorbed and disposed of as solid waste.
- Strong acids or bases should be washed down with copious amounts of water.
- Concentrations of beta-gamma emitters up to 10 μCi/ml may be placed in the system, provided that the total activity discharged does not exceed 40 curies with a period of 30 days.
- Concentrations of fissile material up to 0.1 μCi/ml may be discharged into the RLWS.
- Amounts of tritium up to 10 curies within a 30-day period may be discharged.
- When a transfer of 200 gallons or more is to be made, notify Waste Systems Operations (376-3012) prior to making the transfer.
- When disposal of any quantity of liquid reading greater than 500 mR/hr is to be made, approval of Waste Systems Operations must be obtained (376-3012) because the Retention Process diverter may be activated.
- A line manager should be assigned responsibility for each opening into the RLWS. The list of responsible personnel in each building should be kept up-to-date by the building administrator.

6.3.5 Dangerous Liquid Waste

Non-radioactive dangerous wastes, as defined in MG-99, Section 8, (reactive, corrosive, ignitable, or toxic materials), must be specially handled. Instructions for packaging, handling, and disposal are in Section 10 of this manual.

# 3.0 LIQUID RADIOACTIVE WASTE

## 3.1 Policy

Westinghouse Hanford Company shall control liquid wastes in a manner that

- o assures the safety of the employes and the general public and meets DOE and other applicable federal, state, and local regulations
- o minimizes, to the extent practicable, releases to the environment
- o limits discharges to the environment in normal waste streams to less than the values listed in Appendix A of this manual on an annual average basis
- o maintains exposure to employes as low as reasonably achievable.

## 3.2 Radioactive Liquid Waste Streams

### 3.2.1 Introduction

A detailed 300 Area system description can be found in the Waste Management Manual, MG-75. Briefly, the RLWS serves a limited number of discharge points in the 324, 325, 326, 327, and 329 Buildings. Waste water either flows by gravity out of buildings or is collected in tanks and pumped into the RLWS. It flows through an encased line from the buildings to the 340 Receiving and Neutralization Tanks, is periodically loaded into railcars, and is shipped to the 200 Areas where it is offloaded and evaporated to a slurry for storage in waste tanks. FFTF collects radioactive waste water in a tank and periodically ships it to the 340-B Building for offloading to the receiving and neutralization tanks.

Throughout the system there are concerns for spill prevention and control, gamma radiation dose rates, radioactive contamination, solids and liquids that are immiscible in water, and fissile materials and chemicals that could harm the system. This procedure addresses those concerns.

3.2.2 Limits

a. Tank Car

1. pH>9
2. Fissile Material - <2.6 x $10^{-3}$ g/l
3. Separated Organic Phase - nondectable
4. Differential Thermal Analysis - No exothermic reaction below 350°F
5. Nitrite Ion ($NO_2$) - >600 ppm
6. Tritium - <3 x $10^{-3}$ uCi/ml

b. Storage Tanks, Basins, and Sumps.

Storage tanks, basins, and sumps which contain radioactive materials in excess of Appendix A concentrations shall be secondarily contained, monitored, and/or alarmed, as necessary, to preclude leakage to the environs.

c. Leak Rate of Encased or Direct Buried Lines.

Routine pneumatic or hydrostatic testing of encased or direct buried lines shall be conducted. Any indication of leakage shall be promptly repaired.

3.2.3 Operating Requirements

a. Tank Car Contents (Shipments to 200 Area)

1. pH - >9
2. Fissionable Material - <15 g*
3. Separated Organic Phase - nondectable

*Quantities in excess of 15 grams require Criticality Shipping Clearance and Nuclear Material Management approval.

4. Differential Thermal Analysis - No exothermic reaction below 350°F.
5. Nitrite Ion $(NO_2)^-$ >600 ppm
6. Tritium - <0.2 Ci
7. Alpha Emitters - <0.02 uCi/ml
8. Beta Emitters - <10 uCi/ml
9. Dose rate (@ 3 ft from side of car) - <1 R/hr

b. Tank Car Contents (Shipments to 300 Area)

1. Fissionable Material - <15 g
2. Separated Organic Phase - nondetectable
3. Beta Emitters - <10 uCi/ml
4. Dose rate - 200 mR/hr at contact

c. Shipping

1. Removable contamination on the external surfaces of the tank car shall not exceed 10 $pCi/cm^2$ beta or 2 $pCi/cm^2$ alpha.

2. Tank car analytical results shall be obtained prior to shipment.

3. Tank cars shall not be used unless they have passed RHO preventive maintenance inspection.

4. Organics and other liquid wastes incompatible with the RLWS shall be packaged for disposal in accordance with the requirements of the HEDL Packaging and Shipping Committee and Waste Systems.

d. Loadout Facility

Dose rates to personnel in the loadout facility shall be maintained as low as reasonably achievable.

e. Facility Requirements

Building Administrators or other responsible personnel of all facilities which discharge to the RLWS shall institute administrative and operating procedures necessary to achieve the following:

1. minimize the entry to the system of insoluble particles which are not colloidal or of oils immiscible with water.

2. ensure discharges to the RLWS are compatible with the operational controls specified in 3.2.3.a.

3. provide notification in writing and obtain Waste Systems concurrence prior to discharging to the RLWS materials or quantities in excess of the following:

   - Fissionable Materials - 1 g/month
   - Alpha Emitters - 0.02 uCi/ml or 0.1 Ci/month.
   - Beta Emitters - 10 uCi/ml or 100 Ci/month.
   - 500 gallons/day
   - Radioactive materials with low beta energy which might not be detected in normal radiochemical analysis (e.g., $^{3}H$, $^{14}C$, $^{35}S$, $^{45}Ca$, $^{99}Tc$, $^{147}Pm$) - 1 mCi/month

4. ensure storage tanks, basins, and sumps are operated, maintained, and alarmed to prevent the release of radioactive materials to uncontrolled areas in excess of Appendix A concentrations.

f. Operating Manuals and Procedures

1. Building Administrators or other responsible persons in all facilities with connections to the RLWS shall develop a document which provides a clear, concise description of the RLWS within the building, applicable administrative controls and operating procedures, and any other information necessary to adequately describe the system.

2. Waste Systems Engineering shall develop and maintain a manual which

   o describes the RLWS, its limitations and capabilities.

   o provides one-line drawings of the entire system and reference print numbers.

   o imposes requirements that ensure the user has the necessary control over waste content and discharge rate to comply with this operating guide.

   o imposes requirements for record keeping by the user to provide data necessary for reliable system operation and auditability.

g. Training

Waste Systems shall specify the minimum acceptable training for both loadout Facility and Building RLWS operators including:

o scope and content of training
o method of demonstrating proficiency
o qualifying organization
o requalification period and requirements.

h. Testing of RLWS Lines

1. The annular space surrounding encased, "buried" RLWS piping shall be pneumatically tested annually. Direct buried RLWS piping shall be hydrostatically tested at least annually.

2. Facility RLWS piping and associated storage tanks, basins, and sumps shall be visually inspected annually. Facility RLWS piping and associated storage tanks, basins, and sumps which cannot be visually inspected shall be hydrostactically tested annually.

3. For in-cell piping at the FFTF, the annual inspection may be performed upon routine cell entry provided no other indications of leakage are present.

i. Sampling

Representative samples shall be obtained and analyzed prior to

- shipping a tank car
- discharging a basin, holdup tank, or storage tank to the loadout facility

j. Instrument Monitoring

1. Gamma dose rate monitors installed on RLWS lines and tanks shall be operated, maintained, and calibrated as specified by Waste Systems Operations.

2. Gamma dose rate alarm settings on facility monitors shall be set as low as practicable consistent with the operating requirements of the facility. In no case should the alarm setting exceed 1.0 R/hr.

k. Notifications

The following list is not all inclusive but is intended to convey the types of information which must be relayed to various HEDL operating groups.

1. Environmental and Radiological Engineering shall be promptly notified of:

   - o any spill of radioactive liquid
   - o failure of any portion of the system to satisfactorily pass a hydrostatic test or visual inspection.
   - o tank car radiation or contamination levels in excess of allowable limits.
   - o significant discrepancies between batch transfer estimated curies or volumes and actual data.

2. Building Administrators shall be promptly notified of:

   - o changes in permissible waste content
   - o failure of equipment or other occurrences which would restrict loadout facility operations.

3. Waste Systems Operation shall be promptly notified of:

   - o valid alarms on RLWS gamma monitors
   - o inadvertent release of undesirable materials to the RLWS
   - o tank car sample results which indicate a failure to meet the criteria of 3.2.3.a.
   - o failure of equipment which would limit RLWS operations.

3.2.4 Records

a. Waste Systems Operation shall maintain records of:

- operations at the 340 Complex
- analytical data on 340 tanks and tank car shipments to RHO
- 340 Complex operating personnel qualifications
- visual inspections and/or hydrostatic tests of 340 Complex piping and of RLWS piping outside building.
- batch transfers
- loadout facility piping visual inspections and/or hydrostatic tests.

b. Operational Safety shall maintain records of:

- waivers from safety-related requirements,
- the location of accidental releases of radioactive liquids to the ground, a determination of the radionuclide identities, and the amount of nuclides releases.

c. Building Administrators shall maintain records of:

- visual inspections and/or hydrostatic testing of facility-related RLWS piping
- operator training and qualification
- RLWS locked valve status.

..3 Diversion Waste System (DWS)

3.3.1 Introduction

The Diversion Waste System (DWS) accepts laboratory wastes which are normally uncontaminated by radionuclides but which have the potential for such contamination. Diverters installed in various buildings served by the system direct the wastes to the RLWS if contamination is detected, otherwise are discharged to the Process Sewer. For this reason, this waste should meet the requirements for discharge to the Process Sewer (see Section 6).

3.3.2 Limits

Radioactivity in liquid waste discharged to ground in or near the 300 or 400 Areas shall not exceed Appendix A concentration guides when averaged over one year.

3.3.3 Operating Requirements

a. Radioactivity

Liquid wastes which are known to contain radioactive materials in excess of Appendix A concentrations shall not be discharged to the DWS.

b. Discharges from Individual Buildings

1. Waste water diverters shall be set to divert waste water flow from the Process Sewer to the Radioactive Liquid Waste System at a concentration of $5 \times 10^{-5}$ uCi/ml.

2. Waste Systems Operation shall:

- ensure that waste water diverters are operated, maintained, calibrated, and periodically checked to ensure the desired system reliability.
- label as necessary DWS lines and connections.
- train personnel in the proper use of the system.

3. Building Administrators or other responsible individuals shall develop procedures to administratively control the system.

c. Hydrostatic Testing

Waste Systems Operation shall ensure that exposed facility DWS piping is visually inspected for leakage annually. Facility DWS piping which cannot be visually inspected shall be pneumatically or hydrostatically tested annually.

d. Sampling

1. Building Administrators or other responsible persons shall ensure that water samples are obtained and analyzed monthly for basins which may become contaminated (e.g., 3730 Basin).

2. Building Administrators shall ensure that a grab sample is obtained and analyzed when a diversion to the RLWS occurs.

e. Notifications

The following list is not all inclusive but is intended to convey the types of information which must be relayed to the various HEDL operating groups.

1. Environmental and Radiological Engineering shall be notified of the following:

   o failure of a diverter to source check or operationally check satisfactorily.

   o all diverts, cause, activity, etc.

   o inadvertent release of nonradioactive hazardous materials (see Section 6) in significant concentrations to the DWS.

2. Waste Systems shall be promptly notified of:

   o all diverts

o loss of diverter capability.

3.3.4 Records

Records shall be maintained by the following organizations of the following diverter-related information:

1. OHP - Diverter source checks

2. Waste Systems Operations - all diverts, cause, corrective action, and activity released.

3. Laboratory Maintenance - diverter calibration, maintenance, and repair data.

## 3.4 References

1. DOE-RL 5480.2, "Radioactive Waste Management."

2. DOE-Order 5480.1A, "Environmental Protection, Safety and Health Protection Program for DOE Operations.

# 8.0 DANGEROUS WASTE CONTROL

## 8.1 Policy

Materials obtained for use in the laboratory may ultimately become dangerous wastes or may be released to the environment. It is WHC's policy to minimize the amount of dangerous waste generated, to minimize the impact to the environment in the event of an accidental release, and to comply with the State of Washington Dangerous Waste Regulations and other DOE imposed requirements.

## 8.2 Introduction

8.2.1 Dangerous wastes include those discard materials which could adversely affect persons, plants, or animals if released to the environment.

8.2.2 PCB (polychlorinated biphenyl) is managed in accordance with the Toxic Substances Control Act. WHAN-M-11, "Industrial Safety," Section 13.5, describes the PCB control program including disposal of PCB equipment.

8.2.3 Asbestos control is described in Section 12.8 of WHAN-M-11. Conformance with WHAN-M-11 requirements will satisfy Dangerous Waste Control requirements also.

8.2.4 This standard is directed to protection of the environment. Guidance for the protection of workers is provided in WHAN-M-11, "Industrial Safety."

## 8.3 Terminology

a. The State of Washington has developed regulations to implement the federal government hazardous waste programs, WAC 173-303. The state designates these materials as dangerous wastes. Extremely hazardous wastes and dangerous wastes are the two waste subcategories in the state dangerous waste program.

b. Solid waste, as defined by the EPA, includes solid, liquid, semi-solid and contained gaseous material that might be buried or discharged to the ground.

8.4 Dangerous Waste

8.4.1 Introduction

a. Wastes are categorized as either

- extremely hazardous waste (EHW)
- dangerous waste (DW), or
- undesignated waste

b. Undesignated wastes are those waste materials which are not designated as either extremely hazardous waste or dangerous waste using the identification procedure in Section 8.5.

c. Both the waste category and the Dangerous Waste Number may be determined by use of the flow chart (Figure 8-1) and the identification procedure in Section 8.5.

8.4.2 Use of The Dangerous Waste Flow Chart

a. Figure 8-1 is designed to aid the waste generator in determining whether a waste material is designated as a dangerous waste.

b. Obtain Waste Systems Engineering (WSE) approval prior to disposing of these materials as nonhazardous waste.

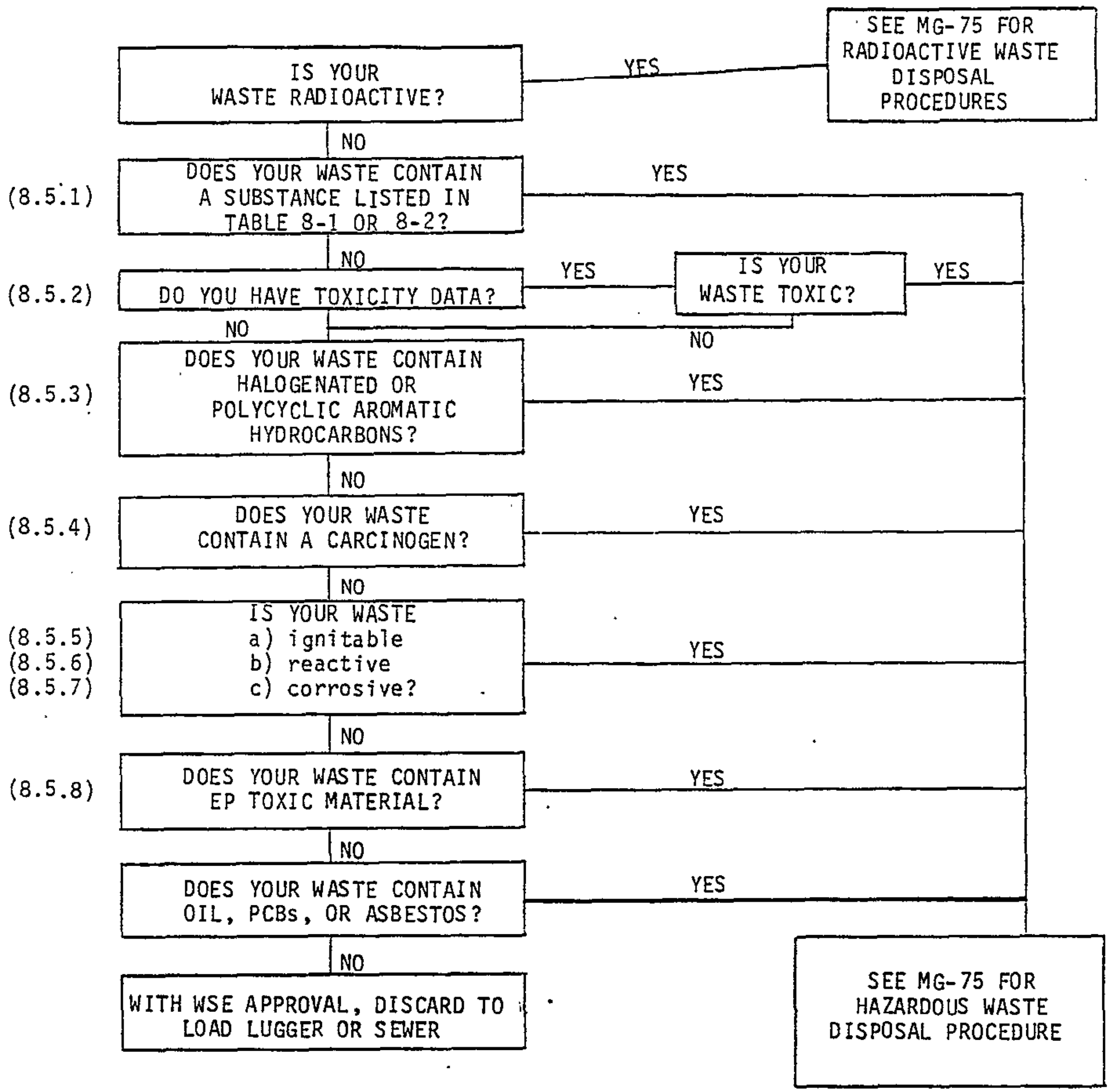
8.5 Identification of Dangerous Wastes

8.5.1 Dangerous Wastes Lists

Waste containing any of the chemicals listed in Table 8-1 or Table 8-2 shall be marked with the appropriate dangerous waste numbers and hazard designation.

8.5.2 Toxic Wastes

The toxic category for each constituent in a waste may be determined directly from Table 8-3 or by obtaining data from the NIOSH Registry (contact Environmental and Radiological Engineering to obtain NIOSH Registry data) and checking these data against the toxic category table, below. If data




DANGEROUS WASTE FLOW CHART

FIGURE 8-1

is available for more than one of the four toxicity criteria (aquatic, oral, inhalation, or dermal), then the data of severest toxicity shall be assigned to the constitutent. If the Equivalent Concentration exceeds 0.01%, the waste shall be designated EHW (WT01). If the Equivalent Concentration lies between 0.001% and 0.01%, the waste shall be designated DW (WT02). Below 0.001% Equivalent Concentration, toxicity will not be the determining factor in selecting the disposal procedure.

8.5.3 Persistent Wastes

Waste containing halogenated hydrocarbons shall be designated EHW (WP-01) if the sum of the concentrations of these materials exceeds 1.0%. If the summed concentration lies between 0.01% and 1.0%, the waste shall be designated DW (WP-01). Waste containing polycyclic aromatic hydrocarbons shall be designated EHW (WP-03) if the sum of the concentrations of these materials exceeds 1.0%. Wastes containing less than 1.0% polycyclic aromatic hydrocarbons and less than 0.01% halogenated hydrocarbons will not be controlled because of persistent chemical content.

8.5.4 Carcinogenic Wastes

Wastes containing IARC positive carcinogens in concentrations exceeding 1.0% shall be designated EHW (WC01). Wastes containing IARC positive carcinogens in concentrations between 0.01% and 1.0% or total IARC positive and suspected carcinogens in concentrations exceeding 1.0% shall be designated DW (WC-02). In lesser concentrations the waste will not be controlled because of the carcinogens present in it.

8.5.5 <u>Ignitable Wastes</u>

a. A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60 degrees C (140 degrees F), as determined by a Pensky-Marrtens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80, or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78;

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard;

(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation; or,

(4) It is an oxidizer as defined in 49 CFR 173.151.

b. Waste that exhibits the characteristic of ignitability, but is not designated as a dangerous waste under any of the sections above, shall be designated DW, and shall be assigned the dangerous waste number of D001.

8.5.6 Corrosive Wastes

a. A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has any one or more of the following properties:

(1) It is aqueous, and has a pH less than or equal to 2, or greater than or equal to 12.5,

(2) It is liquid, and corrodes steel (SAE 1020) at a rate greater than 0.250 inch (6.35 mm) per year at a test temperature of 55 degrees C (130 degrees F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, or

(3) It is solid or semi-solid, and when mixed with an equal weight of water results in a solution, the liquid portion of which has a pH $\leq$ 2 or $\geq$ 12.

b. A solid waste that exhibits the characteristic of corrosivity, but is not designated as a dangerous waste under any of the sections above, shall be designated DW, and shall be assigned the dangerous waste number of D002.

8.5.7 Reactive Wastes

a. A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating;

(2) It reacts violently with water;

(3) It forms potentially explosive mixtures with water;

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment;

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5 can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment;

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source of if heated under confinement;

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

b. A solid waste that exhibits the characteristic of reactivity, but is not designated as dangerous waste under any of the sections above, shall be designated DW, and shall be assigned the dangerous waste number of D003.

8.5.8 Extraction Procedure (EP) Toxicity

a. A waste exhibits the characteristic of EP toxicity if the extract from a representative sample of the waste contains any of the contaminants listed in the EP toxicity list (Table 8-4) at concentrations equal to or greater than the respective value given in the list. When the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this subsection.

b. A waste that exhibits the characteristic of EP toxicity, but is not designated as a dangerous waste under any of the sections above, has the dangerous waste number specified in the list which corresponds to the toxic contaminant causing it to be dangerous.

c. EP toxicity list. Two levels of concentration are established for the contaminants listed. Any waste containing one or more contaminants with concentrations in the EHW range shall cause that waste to be designated EHW. Any waste containing contaminants which occur at concentrations in the DW range only (i.e., no EHW contaminants), shall be designated DW.

8.6 WHC Dangerous Waste Control Procedures

WHC dangerous waste control procedures are developed by Waste Systems Engineering; these procedures are contained in MG-75, "Waste Management Manual."

8.7 Operating Requirements

8.7.1 Acquisition of Dangerous Materials

a. Managers shall establish controls on the acquisition of dangerous materials which ensure that:

1. the least dangerous material is being used considering suitability, costs, personnel safety, and environmental protection.

2. the on-hand quantity of dangerous material is kept to a practical minimum.

3. the manager becomes aware of the acquisition of dangerous materials.

4. the handling, storage, and disposal procedures in place for these materials comply with this manual, WHAN-M-11, "Industrial Safety" and MG-75, "Waste Management."

b. Requisitions for the purchase of known and suspected carcinogens shall be approved by the Manager, Industrial Safety and Fire Protection. Known or suspected carcinogens are identified in Tables 8-1 and 8-2 by the symbol "+" in the "Reason for Designation" column.

c. Purchase of materials that contain Endrin; Lindane; Methoxychlor; Toxaphene; 2,4-D; or 2,4,5-TP Silvex shall be approved by Environmental and Radiological Engineering.

8.7.2 Use and Storage of Hazardous Materials

The use and storage of hazardous materials other than herbicides, pesticides, and rodenticides are governed by the requirements of WHAN-M-11, "Industrial Safety," Chapter 5.

8.7.3 Herbicide and Pesticide Control

a. Small spray cans of pesticides intended for office use are exempt from the requirements of this procedure.

b. Herbicides and pesticides shall be stored in tightly sealed, unbreakable, properly labeled containers only in locations approved by Environmental and Radiological Engineering.

c. Bulk quantities which are diluted to application concentrations shall be limited to those which will be used in the immediate future. Storage of dilute solutions should be avoided.

d. Care shall be taken to avoid contamination of either groundwater or the Columbia River.

e. "Restricted Use" pesticides and herbicides shall be applied by RHO personnel. Other pesticides and herbicides may be applied by WHC personnel.

f. Empty pesticide and herbicide containers shall be disposed of as directed on the container label or disposed of as hazardous waste.

8.8 Spills Involving Dangerous Materials or Petroleum Products

The Building Administrator or other responsible individuals shall immediately notify Environmental and Radiological Engineering (6-3132), Industrial Safety and Fire Protection (6-3070), and Waste Systems Engineering (6-3231) of deliberate discharge or accidental loss involving dangerous materials or petroleum products. For spills which may expose personnel or the environs, call 6-5000.

8.9 Contingency Plans and Emergency Procedures

The risk and consequences of a spill shall be evaluated for each location where dangerous materials listed in Table 8-5 are used, handled or stored. Provisions for containment, contingency plans, and emergency procedures shall be provided. The degree of containment and extent of contingency planning shall be commensurate with the threat to employes and the threat of loss to the environs. Plans shall include decontamination of the spill site and disposal of spilled material, and protective clothing and respiratory protection needed. Secondary containment shall be provided to prevent the loss of dangerous materials in a way that would contaminate the groundwater.

8.10 Requirements Governing the Disposal of Dangerous Materials

8.10.1 Prohibition on Disposal via the Radioactive Liquid Waste System, Process Sewer, Sanitary Waste System, Diversion Waste System, or Dry Wells.

1. Dangerous Wastes, as described in Section 8.4 "Designation of Dangerous Waste," shall not be disposed of via the:

   - Radioactive Liquid Waste System (unless it is also radioactive),
   - Process Sewer
   - Sanitary Waste System
   - Diversion Waste System
   - Dry Wells

2. Additional information regarding discharges to these systems is contained in Section 6, "Nonradioactive Liquid Waste," or Section 2, "Liquid Radioactive Waste."

8.10.2 Prohibition on Disposal as "Common Trash"

Dangerous wastes that are described in section 8.4 "Designation of Dangerous Waste," shall not be disposed of as "common trash".

8.10.3 Disposal of empty containers that previously held Dangerous Wastes.

1. Containers are considered to be empty when all wastes have been taken out which can be removed using practices commonly used to remove materials from that type of container and when the lessor of the following quantities remain:

   a. less than one-inch remains at the bottom of the container, or

   b. less than 1% of the containers total volume. (<.3% for containers > 110 gallons)

2. A compressed gas cylinder is empty when the pressure inside the container equals or nearly equals atmospheric pressure.

3. Empty containers shall be disposed of in accordance with the requirements specified in MG-75, "Waste Management Manual."

8.10.4 Packaging and Shipping of Hazardous Materials, including Dangerous Wastes.

(1) Waste Systems Engineering shall:

   - represent HEDL in all dealings with the waste contractor in matters pertaining to the disposal of dangerous wastes.

   - establish the packaging and labeling requirements for dangerous wastes.

(2) Shipments of hazardous materials, including dangerous wastes, shall comply with the requirements of MG-137, "Hazardous Materials Packaging and Shipping."

(3) Wastes which are radioactive shall be segregated from other dangerous waste to the extent practicable.

(4) Wastes that are both radioactive and hazardous in some other way shall be managed as radioactive after all reasonable and practical means of mitigating the non-radioactive hazards have been completed.

8.10.5 <u>Operation of 3718-F, 221-T And 105 DR Alkali Metal Treatment Facilities</u>

a. Alkali Metal Treatment Facilities shall be inspected to prevent malfunctions and deterioration, operator errors, and discharges which may cause or lead to the release of dangerous waste constituents to the environment. MG-75, "Waste Management" contains the specific requirements for the content of these plans.

b. Alkali Metal Treatment Facilities shall develop emergency procedures to lessen the potential impact on public health and the environment in the event of an unplanned release. MG-75, "Waste Management" contains the specific requirements for the content of these procedures.

8.11 <u>Training</u>

a. Waste Generator Training

Dangerous waste generators shall receive initial training and annual retraining which ensures:

(1) compliance with the dangerous waste management procedures.

(2) knowledge of emergency procedures related to dangerous waste releases.

(3) knowledge of handling, segregation, and packaging procedures.

b. Waste Systems Operation Training

Waste Systems Operation personnel who transport, handle, package, repackage, or work in a facility where dangerous wastes are held prior to transport to the Waste Contractor, treated, or stored shall receive initial training and annual retraining which ensures:

(1) compliance with the dangerous waste management procedures.

(2) knowledge of emergency procedures related to dangerous waste releases during transport, packaging, treatment, or storage facility.

(3) knowledge of proper handling, packaging, transport, and storage procedures.

c. Records of Training and Retraining

Auditable records of Waste Generator and Waste Systems Operation personnel training and retraining shall be maintained by the cognizant supervisor or manager.

8.12 Records and Reports

Waste Systems Engineering shall maintain records and provide reporting data as necessary on WHC Dangerous Waste Generation, treatment, and disposal.

8.13 References

1. DOE 5480.1A, "Environmental Protection, Safety, and Health Protection Program for DOE Operations."

2. 40CFR162, "Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act."

3. 40CFR260, "Hazardous Waste Management System: General."

4. 40CFR261, "Identification and Listing of Hazardous Waste."

5. 40CFR262, "Standard Applicable to Generators of Hazardous Waste."

6. 40CFR761, "Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions."

7. DOE-RL 5480.1 Chapter II, Part C, "Regulated Carcinogen or Suspected Carcinogen Materials."

8. WAC-173-303, "Dangerous Waste Regulations," State of Washington.

# TABLE 8-1

## ACUTELY DANGEROUS CHEMICAL PRODUCTS

| Dangerous Waste No. | Substance | WDOE Hazard Designation | Reason for Designation* |
|---|---|---|---|
| P023 | Acetaldehyde, chloro– | EHW | B H |
| U001 | Acetaldehyde | EHW | C |
| U034 | Acetaldehyde, trichloro– | EHW | H |
| P002 | Acetamide, N–(aminothioxomethyl)– | EHW | B |
| P057 | Acetamide, 2-fluoro– | EHW | B H |
| P058 | Acetic acid, fluoro–, sodium salt | EHW | A H |
| U144 | Acetic acid, lead salt | EHW | D EP |
| P066 | Acetimidic acid, N–[(methylcarbamoyl)oxy]thio–, methyl ester | EHW | B |
| U003 | Acetonitrile | EHW | C I |
| P001 | 3–(alpha–Acetonyl–benzyl)–4–hydroxycoumarin and salts | EHW | A |
| P002 | 1–Acetyl–2–thiourea | EHW | B |
| U006 | Acetyl chloride | EHW | C H O R |
| P003 | Acrolein | EHW | X I |
| U007 | Acrylamide | EHW | C |
| U008 | Acrylic acid | EHW | C O I |
| U009 | Acrylonitrile | EHW | C + I |
| P070 | Aldicarb | EHW | B |
| P004 | Aldrin | EHW | X H |
| P005 | Allyl alcohol | EHW | B I |
| P006 | Aluminum phosphide | EHW | B R |
| P007 | 5–(Aminomethyl)–3–isoxazolol | EHW | B |
| P008 | 4–Aminopyridine | EHW | B |
| P009 | Ammonium picrate | EHW | R |
| P119 | Ammonium vanadate | EHW | B |
| U012 | Aniline | EHW | C I |
| P010 | Arsenic acid | EHW | B |
| P012 | Arsenic (III) oxide | EHW | B + |
| P011 | Arsenic (V) oxide | EHW | B |
| P011 | Arsenic pentoxide | EHW | B |
| P012 | Arsenic trioxide | EHW | B + |
| P038 | Arsine, diethyl– | EHW | B |
| U015 | Azaserine | EHW | C + |
| P054 | Aziridine | EHW | B + |
| U010 | Azirino(2',3':3,4)pyrrolo(1,2a)indole–4,7–dione, 6–amino–8[((aminocarbonyl)oxy) methyl]–1,1a,2,8,8a,8b–hexahydro–8a–methoxy–5–methyl– | EHW | B + |
| P013 | Barium cyanide | EHW | A |
| U157 | Benz[j]aceanthrylene, 1,2–dihydro–3–methyl– | EHW | H P |
| U017 | Benzal chloride | EHW | D H |
| U018 | Benz[a]anthracene | EHW | P + |
| U018 | 1,2–Benzanthracene | EHW | P + |
| U094 | 1,2–Benzanthracene, 7,12–dimethyl– | EHW | C P |
| U012 | Benzenamine | EHW | C I |
| P024 | Benzenamine, 4–chloro– | EHW | C H |
| U049 | Benzenamine, 4–chloro–2–methyl– | EHW | H |
| U093 | Benzenamine, N,N–dimethyl–4–(phenylazo)– | EHW | C + |
| U158 | Benzenamine, 4,4–methylenebis(2–chloro– | EHW | H + |
| P077 | Benzenamine, 4–nitro– | EHW | D ? |
| P028 | Benzene, (chloromethyl)– | EHW | B H + |
| U019 | Benzene | EHW | C + I |
| U038 | Benzeneacetic acid, 4–chloro–alpha–(4–chlorophenyl)–alpha–hydroxy, ethyl ester | EHW | H |
| U030 | Benzene, 1–bromo–4–phenoxy– | EHW | H |
| U037 | Benzene, chloro– | EHW | B H I |
| U190 | 1,2–Benzenedicarboxylic acid anhydride | EHW | C |
| U070 | Benzene, 1,2–dichloro– | EHW | B H |
| U071 | Benzene, 1,3–dichloro– | EHW | B H |
| U072 | Benzene, 1,4–dichloro– | EHW | B H |
| U017 | Benzene, (dichloromethyl)– | EHW | D H |
| U223 | Benzene, 1,3–diisocyanatomethyl– | EHW | B R |
| U239 | Benzene, dimethyl– | EHW | C I |
| U201 | 1,3–Benzenediol | EHW | C |
| U127 | Benzene, hexachloro– | EHW | H |
| U056 | Benzene, hexahydro– | EHW | C I |
| U188 | Benzene, hydroxy– | EHW | C |
| U220 | Benzene, methyl– | EHW | C I |
| U105 | Benzene, 1–methyl–1–2,4–dinitro | EHW | C |
| U106 | Benzene, 1–methyl–2,6–dinitro– | EHW | C |
| U055 | Benzene, (1,methylethyl)– | EHW | C I |
| U169 | Benzene, nitro– | EHW | C I |
| U183 | Benzene, pentachloro | EHW | H |
| U185 | Benzene, pentachloronitro– | EHW | D H + |
| U020 | Benzenesulfonic acid chloride | EHW | D H O R |
| U020 | Benzenesulfonyl chloride | EHW | D H O R |
| U207 | Benzene, 1,2,4,5–tetrachloro– | EHW | D H |
| U023 | Benzene, (trichloromethyl)– | EHW | H O R |
| P042 | 1,2–Benzenediol, 4–[1–hydroxy–2–(methylamino)ethyl]– | EHW | B |
| P014 | Benzenethiol | EHW | A |
| U021 | Benzidine | EHW | B + |
| U022 | Benzo[a]pyrene | EHW | P + |
| U022 | 3,4–Benzopyrene | EHW | P + |
| U197 | p–Benzoquinone | EHW | C |
| U023 | Benzotrichloride | EHW | H O R |
| U050 | 1,2–Benzphenanthrene | EHW | P + |
| P028 | Benzyl chloride | EHW | B H + |
| P015 | Beryllium dust | EHW | C + |
| U085 | 2,2'–Bioxirane | EHW | B I |
| U021 | (1,1'–Biphenyl)–4,4'–diamine | EHW | B + |
| U073 | (1,1'–Biphenyl–4,4'–diamine, 3,3'–dichloro– | EHW | H + |
| U095 | (1,1'–Biphenyl)–4,4'–diamine, 3,3'–dimethyl– | EHW | C + |
| U024 | Bis(2–chloroethoxy) methane | EHW | C H |
| U027 | Bis(2–chloroisopropyl) ether | EHW | C H O |
| P016 | Bis(chloromethyl) ether | EHW | B H + |
| U246 | Bromine cyanide | EHW | C H |
| P017 | Bromoacetone | EHW | C H |
| U225 | Bromoform | EHW | H |
| U030 | 4–Bromophenyl phenyl ether | EHW | H |
| P018 | Brucine | EHW | A |
| U128 | 1,3–Butadiene, 1,1,2,3,4,4–hexachloro– | EHW | C H |
| U035 | Butanoic acid, 4–[bis(2–chloroethyl) amino] benzene– | EHW | H + |
| U160 | 2–Butanone peroxide | EHW | B R |
| U053 | 2–Butenal | EHW | B I |
| U074 | 2–Butene, 1,4–dichloro– | EHW | C H I |
| U032 | Calcium chromate | EHW | C + EP |
| P021 | Calcium cyanide | EHW | B |
| P123 | Camphene, octachloro– | EHW | X H |
| U178 | Carbamic acid, methylnitroso–, ethyl ester | EHW | C + |
| U176 | Carbamide, N–ethyl–N–nitroso– | EHW | C + |
| U177 | Carbamide, N–methyl–N–nitroso– | EHW | C + |
| U219 | Carbamide, thio– | EHW | C + |
| P103 | Carbamimidoselenoic acid | EHW | B |
| U097 | Carbamoyl chloride, dimethyl– | EHW | D H + |
| P022 | Carbon bisulfide | EHW | D I ? |
| P022 | Carbon disulfide | EHW | D I ? |
| U156 | Carbonochloridic acid, methyl ester | EHW | B H I |
| U033 | Carbon oxyfluoride | EHW | B H R |
| U211 | Carbon tetrachloride | EHW | C H + |
| P095 | Carbonyl chloride | EHW | B H |
| U033 | Carbonyl fluoride | EHW | B H R |
| U035 | Chlorambucil | EHW | H + |
| U036 | Chlordane, technical | EHW | X H |

## TABLE 8-1

| Dangerous Waste No. | Substance | WDOE Hazard Designation | Reason for Designation* |
|---|---|---|---|
| P033 | Chlorine cyanide | EHW | A H |
| U026 | Chlornaphazine | EHW | H + |
| P023 | Chloroacetaldehyde | EHW | B H |
| P024 | p-Chloroaniline | EHW | C H |
| U037 | Chlorobenzene | EHW | B H I |
| U039 | 4-Chloro-m-cresol | EHW | H |
| U041 | 1-Chloro-2,3-epoxypropane | EHW | C H + I |
| U042 | 2-Chloroethyl vinyl ether | EHW | C H |
| U044 | Chloroform | EHW | C H + |
| U046 | Chloromethyl methyl ether | EHW | D H + I |
| U047 | beta-Chloronaphthalene | EHW | D H |
| U048 | o-Chlorophenol | EHW | D H |
| P026 | 1-(o-Chlorophenyl)thiourea | EHW | A H |
| P027 | 3-Chloropropionitrile | EHW | B H |
| U049 | 4-Chloro-o-toluidine, hydrochloride | EHW | H |
| U032 | Chromic acid, calcium salt | EHW | C + EP |
| U050 | Chrysene | EHW | P + |
| P029 | Copper cyanides | EHW | B |
| U051 | Creosote | EHW | B |
| U052 | Cresols | EHW | B |
| U052 | Cresylic acid | EHW | B |
| U053 | Crotonaldehyde | EHW | B I |
| U055 | Cummene | EHW | C I |
| P030 | Cyanides (soluble cyanide salts), not elsewhere specified | EHW | A |
| P031 | Cyanogen | EHW | B I |
| U246 | Cyanogen bromide | EHW | C H |
| P033 | Cyanogen chloride | EHW | A H |
| U197 | 1,4-Cyclohexadienedione | EHW | C |
| U056 | Cyclohexane | EHW | C I |
| U057 | Cyclohexanone | EHW | C I |
| U130 | 1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro- | EHW | X H |
| U058 | Cyclophosphamide | EHW | C H + I |
| U240 | 2,4-D, salts and esters | EHW | B H |
| U060 | DDD | EHW | C H + |
| U061 | DDT | EHW | X H + |
| U142 | Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one | EHW | X H |
| U062 | Diallate | EHW | C H + |
| U133 | Diamine | EHW | B + R |
| U063 | Dibenz[a,h]anthracene | EHW | A P + |
| U063 | 1,2:5,6-Dibenzanthracene | EHW | P + A |
| U064 | 1,2:7,8-Dibenzopyrene | EHW | P + |
| U064 | Dibenz[a,i]pyrene | EHW | P + |
| U066 | 1,2-Dibromo-3-chloropropane | EHW | C H + |
| U062 | S-(2,3-Dichloroallyl) | EHW | C H + |
| | diisopropylthiocarbamate | EHW | C H + |
| U070 | o-Dichlorobenzene | EHW | B H |
| U071 | m-Dichlorobenzene | EHW | B H |
| U072 | p-Dichlorobenzene | EHW | B H |
| U073 | 3,3'-Dichlorobenzidine | EHW | H + |
| U074 | 1,4-Dichloro-2-butene | EHW | C H I |
| U075 | Dichlorodifluoromethane | EHW | H |
| U060 | Dichloro diphenyl dichloroethane | EHW | C H + |
| U061 | Dichloro diphenyl trichloroethane | EHW | X H + |
| U078 | 1,1-Dichloroethylene | EHW | C H + |
| U079 | 1,2-Dichloroethylene | EHW | D H |
| U025 | Dichloroethyl ether | EHW | C H |
| U081 | 2,4-Dichlorophenol | EHW | D H |
| U082 | 2,6-Dichlorophenol | EHW | D H |
| U240 | 2,4-Dichlorophenoxyacetic acid, salts and esters | EHW | B H |
| P036 | Dichlorophenylarsine | EHW | B H |
| U083 | 1,2-Dichloropropane | EHW | C H I |
| U084 | 1,3-Dichloropropane | EHW | C H |
| P037 | Dieldrin | EHW | X H + |
| U085 | 1,2:3,4-Diepoxybutane | EHW | B I |
| P038 | Diethylarsine | EHW | B |
| P039 | O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate | EHW | A |
| U087 | O,O-Diethyl-S-methyl-dithiophosphate | EHW | B |
| P041 | Diethyl-p-nitrophenyl phosphate | EHW | A |
| P040 | O,O-Diethyl O-pyrazenyl phosphorothioate | EHW | A |
| P043 | Diisopropyl fluorophosphate | EHW | B H |
| P044 | Dimethoate | EHW | A |
| U092 | Dimethylamine | EHW | C I |
| U093 | Dimethylaminoazobenzene | EHW | C + |
| U094 | 7,12-Dimethylbenz[a]anthracene | EHW | C P |
| U095 | 3,3'-Dimethylbenzidine | EHW | C + |
| U096 | alpha,alpha-Dimethylbenzylhydroperoxide | EHW | C R |
| U097 | Dimethylcarbamoyl chloride | EHW | D H + |
| U099 | 1,2-Dimethylhydrazine | EHW | C + I |
| P045 | 3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl] oxime | EHW | B |
| P071 | O,O-Dimethyl O-p-nitrophenyl phosphorothioate | EHW | A |
| P082 | Dimethylnitrosamine | EHW | B + |
| P046 | alpha, alpha-Dimethylphenethylamine | EHW | C |
| U103 | Dimethyl sulfate | EHW | C O + |
| P047 | 4,6-Dinitro-o-cresol and salts | EHW | B |
| P034 | 4,6-Dinitro-o-cyclohexylphenol | EHW | C |
| P048 | 2,4-Dinitrophenol | EHW | B |
| U105 | 2,4-Dinitrotoluene | EHW | C |
| U106 | 2,6-Dinitrotoluene | EHW | C |
| P020 | Dinoseb | EHW | B |
| U109 | 1,2-Diphenylhydrazine | EHW | C |
| P035 | Diphosphoramide, octamethyl | EHW | ? |
| U110 | Dipropylamine | EHW | C I |
| U111 | Di-n-propylnitrosamine | EHW | C + |
| P039 | Disulfoton | EHW | A |
| P049 | 2,4-Dithiobiuret | EHW | A |
| P109 | Dithiopyrophosphoric acid, tetraethyl ester | EHW | A |
| P050 | Endosulfan | EHW | X H |
| P088 | Endothall | EHW | B |
| P051 | Endrin | EHW | X H |
| P042 | Epinephrine | EHW | B |
| U001 | Ethanal | EHW | C |
| U174 | Ethanamine, N-ethyl-N-nitroso- | EHW | C + |
| P046 | Ethanamine, 1,1-dimethyl-2-phenyl- | EHW | C |
| U067 | Ethane, 1,2-dibromo- | EHW | C H + |
| U076 | Ethane, 1,1-dichloro- | EHW | D H |
| U077 | Ethane, 1,2-dichloro- | EHW | D H |
| U114 | 1,2-Ethanediylbiscarbamodithioic acid | EHW | B |
| U131 | Ethane, 1,1,1,2,2,2-hexachloro- | EHW | H |
| U024 | Ethane, 1,1'-[methylenebis(oxy)] bis[2-chloro- | EHW | C H |
| U247 | Ethane, 1,1,1-trichloro-2,2-bis(p-methoxy phenyl) | EHW | D H |
| U003 | Ethanenitrile | EHW | C |
| U025 | Ethane, 1,1'-oxybis[2-chloro- | EHW | C H |
| U184 | Ethane, pentachloro- | EHW | A H |
| U208 | Ethane, 1,1,1,2-tetrachloro- | EHW | H |
| U209 | Ethane, 1,1,2,2-Tetrachloro- | EHW | H |
| U227 | Ethane, 1,1,2-trichloro- | EHW | C H |
| P084 | Ethenamine, N-methyl-N-nitroso | EHW | B + |
| U043 | Ethene, chloro- | EHW | D H + |
| U042 | Ethane, 2-chloroethoxy- | EHW | C H |
| U078 | Ethene, 1,1-dichloro- | EHW | C H + |
| U079 | Ethene, trans-1,2-dichloro- | EHW | D H |
| U210 | Ethene, 1,1,2,2-tetrachloro- | EHW | C H |
| U006 | Ethanoyl chloride | EHW | C H O R |
| P101 | Ethyl cyanide | EHW | B |

# TABLE 8-1

| Dangerous Waste No. | Substance | WDOE Hazard Designation | Reason for Designation* |
|---|---|---|---|
| U038 | Ethyl 4,4'-dichlorobenzilate | EHW | D H |
| U114 | Ethylenebis(dithiocarbamic acid), salts and esters | EHW | B |
| U067 | Ethylene dibromide | EHW | C H |
| U077 | Ethylene dichloride | EHW | D H |
| U115 | Ethylene oxide | EHW | C I |
| P054 | Ethylenimine | EHW | B + |
| U076 | Ethylidene dichloride | EHW | D H |
| P097 | Famphur | EHW | A |
| P056 | Fluorine | EHW | B |
| P057 | Fluoroacetamide | EHW | B H |
| P058 | Fluoroacetic acid, sodium salt | EHW | A H |
| U122 | Formaldehyde | EHW | C |
| P065 | Fulminic acid, mercury (II) salt | EHW | R ? |
| U125 | 2-Furancarboxaldehyde | EHW | C I |
| U147 | 2,5-Furandione | EHW | C |
| U125 | Furfural | EHW | C I |
| U126 | Glycidylaldehyde | EHW | C + |
| U163 | Guanidine, N-nitroso-N-methyl-N'nitro- | EHW | C + |
| P059 | Heptachlor | EHW | X H + |
| U127 | Hexachlorobenzene | EHW | H |
| U128 | Hexachlorobutadiene | EHW | C H |
| U129 | Hexachlorocyclohexane (gamma isomer) | EHW | H + |
| U130 | Hexachlorocyclopentadiene | EHW | X H |
| P051 | 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, endo-1,4,5,8-dimethanophthalene | EHW | X H |
| P037 | 1,2,3,4,10,10-Hexachloro-6,7—epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo, exo-1,4,5,8-dimethanonaphthalene | EHW | X H + |
| U131 | Hexachloroethane | EHW | H |
| P060 | 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, endo-dimethanonaphthalene | EHW | B H |
| P004 | 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8-endo, exodimethanonaphthalene | EHW | B H |
| P060 | Hexachlorohexahydro-endo, endo-dimethanonaphthalene | EHW | B H |
| U132 | Hexachlorophene | EHW | C H |
| U243 | Hexachloropropene | EHW | H |
| P062 | Hexaethyl tetraphosphate | EHW | B |
| U133 | Hydrazine | EHW | B + R |
| P116 | Hydrazinecarbothioamide | EHW | B |
| U099 | Hydrazine, 1,2-dimethyl- | EHW | C + I |
| U109 | Hydrazine, 1,2-diphenyl- | EHW | C |
| P068 | Hydrazine, methyl- | EHW | A I |
| P063 | Hydrocyanic acid | EHW | A |
| P063 | Hydrogen cyanide | EHW | A |
| P096 | Hydrogen phosphide | EHW | B I |
| U135 | Hydrogen sulfide | EHW | B I |
| U096 | Hydroperoxide, 1-methyl-1-phenylethyl- | EHW | C R |
| U245 | Indomethacin | EHW | B H |
| P064 | Isocyanic acid, methyl ester | EHW | I ? |
| P007 | 3(2H)-Isoxazolone, 5-(aminomethyl)- | EHW | B |
| U142 | Kepone | EHW | X H |
| U143 | Lasiocarpine | EHW | C + |
| U144 | Lead acetate | EHW | D EP |
| U129 | Lindane | EHW | H + |
| U147 | Maleic anhydride | EHW | C |
| U149 | Malononitrile | EHW | C |
| U151 | Mercury | EHW | EP |
| P092 | Mercury, (acetato-O)phenyl- | EHW | B |
| P065 | Mercury fulminate | EHW | R ? |
| U152 | Methacrylonitrile | EHW | B I |
| U092 | Methanamine, N-methyl- | EHW | C I |
| P016 | Methane, oxybis(chloro)- | EHW | B H + |
| P112 | Methane, tetranitro- | EHW | A R |
| U029 | Methane, bromo- | EHW | H |
| U045 | Methane, chloro- | EHW | H I |
| U046 | Methane, chloromethyoxy- | EHW | D H + I |
| U068 | Methane, dibromo- | EHW | C H + |
| U080 | Methane, dichloro- | EHW | C H |
| U075 | Methane, dichlorodifluoro- | EHW | H |
| U138 | Methane, iodo- | EHW | H + |
| U211 | Methane, tetrachloro- | EHW | C H + |
| P118 | Methanethiol, trichloro- | EHW | H |
| U153 | Methanethiol | EHW | B I |
| U225 | Methane, tribromo | EHW | H |
| U121 | Methane, trichlorofluoro- | EHW | H |
| U044 | Methane, trichloro- | EHW | C H + |
| P059 | 4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro- | EHW | X H + |
| U036 | 4,7-Methanoindan, 1,2,4,5,6,7,8,8-octa-chloro-3a,4,7,7a-tetrahydro- | EHW | X H |
| P066 | Methomyl | EHW | B |
| P067 | 2-Methylaziridine | EHW | B + I |
| P068 | Methyl hydrazine | EHW | A I |
| P064 | Methyl isocyanate | EHW | I ? |
| P069 | 2-Methyllactonitrile | EHW | A |
| P071 | Methyl parathion | EHW | A |
| U029 | Methyl bromide | EHW | H |
| U045 | Methyl chloride | EHW | H I |
| U156 | Methyl chlorocarbonate | EHW | B H I |
| U226 | Methylchloroform | EHW | C H |
| U157 | 3-Methylcholanthrene | EHW | H P |
| U158 | 4,4'-Methylenebis(2-chloroaniline) | EHW | H + |
| U132 | 2,2'-Methylenebis(3,4,6-trichlorophenol) | EHW | C H |
| U068 | Methylene bromide | EHW | C H + |
| U080 | Methylene chloride | EHW | C H |
| U122 | Methylene oxide | EHW | C |
| U160 | Methyl ethyl ketone peroxide | EHW | B R |
| U138 | Methyl iodide | EHW | H + |
| U163 | N-Methyl-N'-nitro-N-nitrosoguanidine | EHW | C + R |
| U010 | Mitomycin C | EHW | B + |
| U165 | Naphthalene | EHW | B |
| U047 | Naphthalene, 2-chloro- | EHW | D H |
| U166 | 1,4-Naphthalenedione | EHW | C |
| U236 | 2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)-4,4'diyl)]-bis (azo)bis(5-amino-4-hydroxy)-,tetrasodium salt | EHW | H + |
| U166 | 1,4,Naphthaquinone | EHW | C |
| U167 | 1-Naphthylamine | EHW | B + |
| U168 | 2-Naphthylamine | EHW | B + |
| U167 | alpha-Naphthylamine | EHW | B + |
| U168 | beta-Naphthylamine | EHW | B + |
| U026 | 2-Naphthylamine, N,N'-bis(2-chloro-methyl)- | EHW | H + |
| P072 | alpha-Naphthylthiourea | EHW | B |
| P073 | Nickel carbonyl | EHW | B |
| P074 | Nickel cyanide | EHW | D R ? |
| P074 | Nickel (II) cyanide | EHW | D R ? |
| P073 | Nickel tetracarbonyl | EHW | B |
| P075 | Nicotine and salts | EHW | B |
| P076 | Nitric oxide | EHW | B |
| P077 | p-Nitroaniline | EHW | D ? |
| U169 | Nitrobenzene | EHW | C I |
| P078 | Nitrogen dioxide | EHW | A |
| P076 | Nitrogen (II) oxide | EHW | B |
| P078 | Nitrogen (IV) oxide | EHW | A |
| P081 | Nitroglycerine | EHW | R ? |
| U170 | p-Nitrophenol | EHW | C |
| U171 | 2-Nitropropane | EHW | C I |
| U174 | N-Nitrosodiethylamine | EHW | C + |
| P082 | N-Nitrosodimethylamine | EHW | B + |

## TABLE 8-1

| Dangerous Waste No. | Substance | WDOE Hazard Designation | Reason for Designation* |
|---|---|---|---|
| U176 | N-Nitroso-N-ethylurea | EHW | C + |
| U177 | N-Nitroso-N-methylurea | EHW | C + |
| U178 | N-Nitroso-N-methylurethane | EHW | C + |
| P084 | N-Nitrosomethylvinylamine | EHW | B + |
| U179 | N-Nitrosopiperidine | EHW | C + |
| U111 | N-Nitroso-N-propylamine | EHW | C + |
| P050 | 5-Norbornene-2,3,-dimethanol, 1,4,5,6,7,7-hexachloro, cyclic sulfite | EHW | X H |
| P085 | Octamethylpyrophosphoramide | EHW | A |
| P087 | Osmium oxide | EHW | B |
| P087 | Osmium tetroxide | EHW | B |
| P088 | 7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid | EHW | B |
| U058 | 2H-1,3,2-Oxazaphosphorine, 2-[bis(2-chloro- ethyl)amino]tetrahydro-, oxide 2- | EHW | C H I + |
| U115 | Oxirane | EWH | C I |
| U041 | Oxirane, 2-(chloromethyl)- | EHW | C H + I |
| P089 | Parathion | EHW | X |
| U183 | Pentachlorobenzene | EHW | H |
| U184 | Pentachloroethane | EHW | A H |
| U185 | Pentachloronitrobenzene | EHW | D H + |
| U242 | Pentachlorophenol | EHW | A H |
| U188 | Phenol | EHW | C |
| P034 | Phenol, 2-cyclohexyl-4,6-dinitro- | EHW | C |
| P048 | Phenol, 2,4-dinitro- | EHW | B |
| P047 | Phenol, 2,4-dinitro-6-methyl-, and salts | EHW | B |
| P020 | Phenol, 2,4-dinitro-6-(1-methylpropyl)- | EHW | B |
| P009 | Phenol, 2,4,6-trinitro-, ammonium salt | EHW | R |
| U048 | Phenol, 2-chloro- | EHW | D H |
| U039 | Phenol, 4-chloro-3-methyl- | EHW | H |
| U081 | Phenol, 2,4-dichloro- | EHW | D H |
| U082 | Phenol, 2,6-dichloro- | EHW | D H |
| U170 | Phenol, 4-nitro- | EHW | C |
| U242 | Phenol, pentachloro- | EHW | A H |
| U212 | Phenol, 2,3,4,6-tetrachloro- | EHW | C H |
| U230 | Phenol, 2,4,5-trichloro- | EHW | A H |
| U231 | Phenol, 2,4,6-trichloro- | EHW | A H |
| P036 | Phenyl dichloroarsine | EHW | B H |
| P092 | Phenylmercuric acetate | EHW | B |
| P093 | N-Phenylthiourea | EHW | A |
| P094 | Phorate | EHW | X |
| P095 | Phosgene | EHW | B H |
| P096 | Phosphine | EHW | B I |
| P041 | Phosphoric acid, diethyl p-nitrophenyl ester | EHW | A |
| P044 | Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester | EHW | A |
| P043 | Phosphorofluoridic acid, bis(1-methyl-ethyl)-ester | EHW | B H |
| P094 | Phosphorothiac acid, O,O-diethyl S-(ethylthio)methyl ester | EHW | X |
| P097 | Phosphorothioic acid, O,O-dimethyl O-[p-((dimethylamino)-sulfonyl) phenyl]ester | EHW | A |
| P089 | Phosphorothioic acid, O,O-diethyl O-(p-ni-trophenyl)ester | EHW | X |
| P040 | Phosphorothioic acid, O,O-diethyl O-pyra-zinyl ester | EHW | A |
| U189 | Phosphorous sulfide | EHW | B I R |
| U190 | Phthalic anhydride | EHW | C |
| U191 | 2-Picoline | EHW | C |
| P110 | Plumbane, tetraethyl- | EHW | A |
| P098 | Potassium cyanide | EHW | A |
| P099 | Potassium silver cyanide | EHW | A |
| P070 | Propanal, 2-methyl-2(methylthio)-O-[(methylamino)carbonyl]oxime | EHW | B |
| U194 | 1-Propanamine | EHW | C I |
| U110 | 1-Propanamine, N-propyl- | EHW | C I |
| U066 | Propane, 1,2-dibromo-3-chloro- | EHW | C H + |
| U149 | Propanedinitrile | EHW | C |
| P101 | Propanenitrile | EHW | B |
| P027 | Propanenitrile, 3-chloro- | EHW | B H |
| P079 | Propanenitrile, 2-hydroxy-2-methyl- | EHW | A |
| U171 | Propane, 2-nitro- | EHW | C I |
| U027 | Propane, 2,2'oxybis[2-chloro- | EHW | C H O |
| P081 | 1,2,3-Propanetriol, trinitrate- | EHW | R ? |
| U235 | 1-Propanol, 2,3-dibromo-, phosphate (3:1) | EHW | D H |
| U126 | 1-Propanol, 2,3-epoxy- | EHW | C + |
| P017 | 2-Propanone, 1-bromo- | EHW | C H |
| P102 | Propargyl alcohol | EHW | X |
| P003 | 2-Propenal | EHW | X |
| U007 | 2-Propenamide | EHW | C |
| U084 | Propene, 1,3-dichloro- | EHW | C H |
| U243 | 1-Propene, 1,1,2,3,3,3-hexachloro- | EHW | H |
| U009 | 2-Propenenitrile | EHW | C + I |
| U152 | 2-Propenenitrile, 2-methyl- | EHW | B I |
| U008 | 2-Propenoic acid | EHW | C O I |
| P005 | 2-Propen-1-ol | EHW | B I |
| U233 | Propionic acid, 2-(2,4,5-trichlorophenoxy)- | EHW | B H |
| U194 | n-Propylamine | EHW | C I |
| U083 | Propylene dichloride | EHW | C H I |
| P067 | 1,2-Propylenimine | EHW | B + I |
| P102 | 2-Propyn-1-ol | EHW | X |
| P008 | 4-Pyridinamine | EHW | B |
| P075 | Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts | EHW | B |
| U196 | Pyridine | EHW | C I |
| U179 | Pyridine, hexahydro-N-nitroso- | EHW | C + |
| U191 | Pyridine,2-methyl- | EHW | C |
| P111 | Pyrophosphoric acid, tetraethyl ester | EHW | A |
| U201 | Resorcinol | EHW | C |
| P103 | Selenourea | EHW | B |
| U015 | L-Serine, diazoacetate (ester) | EHW | C + |
| P104 | Silver cyanide | EHW | C |
| U233 | Silvex | EHW | B H |
| P105 | Sodium azide | EHW | A |
| P106 | Sodium cyanide | EHW | A |
| P107 | Strontium sulfide | EHW | R |
| P108 | Strychnidin-10-one, and salts | EHW | B |
| P018 | Strychnidin-10-one, 2,3-dimethoxy- | EHW | A |
| P108 | Strychnine and salts | EHW | B |
| U135 | Sulfur hydride | EHW | B I |
| U103 | Sulfuric acid, dimethyl ester | EHW | C O + |
| P115 | Sulfuric acid, thallium (I) salt | EHW | B |
| U189 | Sulfur phosphide | EHW | B I R |
| U232 | 2,4,5-T | EHW | B H + |
| U207 | 1,2,4,5-Tetrachlorobenzene | EHW | D H |
| U208 | 1,1,1,2-Tetrachloroethane | EHW | H |
| U209 | 1,1,2,2-Tetrachloroethane | EHW | H |
| U210 | Tetrachlorothylene | EHW | C H |
| U212 | 2,3,4,6-Tetrachlorophenol | EHW | C H |
| P109 | Tetraethyldithiopyrophosphate | EHW | A |
| P110 | Tetraethyl lead | EHW | A |
| P111 | Tetraethylpyrophosphate | EHW | A |
| P112 | Tetranitromethane | EHW | A R |
| P062 | Tetraphosphoric acid, hexaethyl ester | EHW | B |
| P113 | Thallic oxide | EHW | B |
| P113 | Thallium (III) oxide | EHW | B |
| P114 | Thallium (I) selenide | EHW | C |

TABLE 8-1

| Dangerous Waste No. | Substance | WDOE Hazard Designation | Reason for Designation* |
|---|---|---|---|
| P115 | Thallium (I) sulfate | EHW | B |
| P045 | Thiofanox | EHW | B |
| P049 | Thioimidodicarbonic diamide | EHW | A |
| U153 | Thiomethanol | EHW | B I |
| P014 | Thiophenol | EHW | A |
| P116 | Thiosemicarbazide | EHW | B H + |
| U219 | Thiourea | EHW | C+ |
| P026 | Thiourea, (2-chlorophenyl)- | EHW | A H |
| P072 | Thiourea, 1-naphthalenyl- | EHW | B |
| P093 | Thiourea, phenyl- | EHW | A |
| U220 | Toluene | EHW | C I |
| U223 | Toluene diisocyanate | EHW | B R |
| P123 | Toxaphene | EHW | X H |
| U226 | 1,1,1-Trichloroethane | EHW | C H |
| U227 | 1,1,2-Trichloroethane | EHW | C H |
| U228 | Trichloroethene | EHW | C H + |
| U228 | Trichloroethylene | EHW | C H + |
| P118 | Trichloromethanethiol | EHW | H |
| U121 | Trichloromonofluoromethane | EHW | H |
| U230 | 2,4,5-Trichlorophenol | EHW | A H |
| U231 | 2,4,6-Trichlorophenol | EHW | A H |
| U232 | 2,4,5-Trichlorophenoxyacetic acid | EHW | B H + |
| U235 | Tris(2,3-disbromopropyl) phosphate | EHW | D H |
| U236 | Trypan blue | EHW | H + |
| U237 | Uracil, 5[bis(2-chloromethyl)amino]- | EHW | B H + |
| U237 | Uracil mustard | EHW | B H + |
| P119 | Vanadic acid, ammonium salt | EHW | B |
| P120 | Vanadium pentoxide | EHW | B |
| P120 | Vanadium (V) oxide | EHW | B |
| U043 | Vinyl chloride | EHW | D H + |
| P001 | Warfarin | EHW | A |
| U239 | Xylene | EHW | C I |
| P121 | Zinc cyanide | EHW | C |
| P122 | Zinc phosphide | EHW | B R |

TABLE 8-2

MODERATELY DANGEROUS CHEMICAL PRODUCTS

| Dangerous Waste No. | Substance | WDOE Hazard Designation | Reason for Designation* |
|---|---|---|---|
| U187 | Acetamide, N-(4-ethoxyphenyl)- | DW | D + |
| U005 | Acetamide, N-9H-fluoren-2-yl- | DW | ? |
| U112 | Acetic acid, ethyl ester | DW | D I |
| U214 | Acetic acid, thallium(I) salt | DW | ? |
| U002 | Acetone | DW | D I |
| U004 | Acetophenone | DW | D |
| U005 | 2-Acetylaminofluorene | DW | ? |
| U150 | Alanine, 3-[p-bis(2-chloroethyl)amino] phenyl-, L- | DW | + |
| U011 | Amitrole | DW | D + |
| U014 | Auramine | DW | + |
| U016 | Benz[c]acridine | DW | + |
| U016 | 3,4-Benzacridine | DW | + |
| U014 | Benzenamine, 4,4-carbonimidoylbis(N,N-dimethyl- | DW | + |
| U222 | Benzenamine, 2-methyl-, hydrochloride | DW | D + |
| U181 | Benzenamine, 2-methyl-5-nitro | DW | D |
| U028 | 1,2-Benzenedicarboxylic acid, [bis(2-ethyl-hexyl)] ester | DW | ? |
| U069 | 1,2-Benzenedicarboxylic acid, dibutyl ester | DW | D |
| U088 | 1,2-Benzenedicarboxylic acid, diethyl ester | DW | ? |
| U102 | 1,2-Benzenedicarboxylic acid, dimethyl ester | DW | ? |
| U107 | 1,2-Benzenedicarboxylic acid, di-n-octyl ester | DW | ? |
| U203 | Benzene, 1,2-methylenedioxy-4-allyl- | DW | D + |
| U141 | Benzene, 1,2-methylenedioxy-4-propenyl- | DW | D + |
| U090 | Benzene, 1,2-methylenedioxy-4-propyl- | DW | D + |
| U234 | Benzene, 1,3,5-trinitro- | DW | D R |
| U202 | 1,2-Benzisothiazolin-3-one, 1, 1-dioxide, and salts | DW | + |
| U120 | Benzo[j,k]fluorene | DW | D |
| U091 | (1,1'-Biphenyl)-4-'-diamine, 3,3'-dimeth-oxy- | DW | D + |
| U244 | Bis(dimethylthiocarbomoyl) disulfide | DW | D |
| U028 | Bis(2-ethythoxyl) phthalate | DW | ? |
| U172 | 1-Butanamine, N-butyl-N-nitroso- | DW | D + |
| U031 | 1-Butanol | DW | D I |
| U159 | 2-Butanone | DW | D I |
| U031 | n-Butyl alcohol | DW | D I |
| U136 | Cacodylic acid | DW | D |
| U238 | Carbamic acid, ethyl ester | DW | + |
| U215 | Carbonic acid, dithallium(I) salt | DW | ? |
| U059 | Daunomycin | DW | + |

# TABLE 8-2

| Dangerous Waste No. | Substance | WDOE Hazard Designation | Reason for Designation* |
|---|---|---|---|
| U221 | Diaminotoluene | DW | ? |
| U069 | Dibutyl phthalate | DW | D |
| U192 | 3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide | DW | ? |
| U108 | 1,4-Diethylene dioxide | DW | D + |
| U086 | N,N-Diethylhydrazine | DW | + |
| U088 | Diethyl phthalate | DW | ? |
| U089 | Diethylstilbestrol | DW | + |
| U148 | 1,2-Dihydro-3-,6-pyridizinedione | DW | D |
| U090 | Dihydrosafrole | DW | D + |
| U091 | 3,3'-Dimethoxybenzidine | DW | D + |
| U098 | 1,1-Dimethylhydrazine | DW | + I |
| U101 | 2,4-Dimethylphenol | DW | D |
| U102 | Dimethyl phthalate | DW | ? |
| U107 | Di-n-octyl phthalate | DW | ? |
| U108 | 1,4-Dioxane | DW | D + |
| U117 | Ethane, 1,1'-oxybis- | DW | D I |
| U218 | Ethanethioamide | DW | + |
| U173 | Ethanol, 2,2-(nitrosoimino)bis- | DW | + |
| U004 | Ethanone, 1-phenyl- | DW | D |
| U112 | Ethyl acetate | DW | D I |
| U113 | Ethyl acrylate | DW | D I |
| U238 | Ethyl carbamate (urethan) | DW | + |
| U116 | Ethylene thiourea | DW | D + |
| U117 | Ethyl ether | DW | DI |
| U118 | Ethyl methacrylate | DW | I |
| U119 | Ethyl methanesulfonate | DW | + |
| U139 | Ferric dextran | DW | + |
| U120 | Fluoranthene | DW | D |
| U123 | Formic Acid | DW | D O |
| U124 | Furan | DW | I |
| U213 | Furan, tetrahydro- | DW | I |
| U124 | Furfuran | DW | I |
| U206 | D-Glucopyranose, 2-deoxy-2(3-methyl-3-nitrosoureido)- | DW | + |
| U086 | Hydraxine, 1,2-diethyl- | DW | + |
| U098 | Hydrazine, 1,1-dimethyl- | DW | + I |
| U134 | Hydrofluoric acid | DW | D O |
| U134 | Hydrogen fluoride | DW | D O |
| U136 | Hydroxydimethylarsine oxide | DW | D |
| U116 | 2-Imidazolidinethione | DW | D + |
| U137 | Indeno[1,2,3-cd]pyrene | DW | + |
| U139 | Iron dextran | DW | + |
| U140 | Isobutyl alcohol | DW | D I |
| U141 | Isosafrole | DW | D + |
| U145 | Lead phosphate | DW | + |
| U146 | Lead subacetate | DW | + |
| U148 | Maleic hydrazide | DW | D |
| U150 | Melphalan | DW | + |
| U119 | Methanesulfonic acid, ethyl ester | DW | + |
| U123 | Methanoic acid | DW | D O |
| U154 | Methanol | DW | D I |
| U155 | Methapyrilene | DW | D |
| U154 | Methyl alcohol | DW | D I |
| U186 | 1-Methylbutadiene | DW | D I |
| U159 | Methyl ethyl ketone | DW | D I |
| U161 | Methyl isobutyl ketone | DW | D I |
| U162 | Methyl methacrylate | DW | D I |
| U161 | 4-Methyl-2-pentanone | DW | + |
| U164 | Methylthiouracil | DW | + |
| U059 | 5,12-Naphthacenedione, (8S-cis)-8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxyl]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy- | DW | + |
| U172 | N-Nitrosodi-n-butylamine | DW | D + |
| U173 | N-Nitrosodiethanolamine | DW | + |
| U180 | N-Nitrosopyrrolidine | DW | D + |
| U181 | 5-Nitro-o-toluidine | DW | D |
| U139 | 1,2-Oxathiolane, 2,2-dioxide | DW | + |
| U182 | Paraldehyde | DW | D I |
| U186 | 1,3-Pentadiene | DW | D I |
| U187 | Phenacetin | DW | D+ |
| U101 | Phenol, 2,4-dimethyl- | DW | D |
| U137 | 1,10-(1,2-phenylene)pyrene | DW | + |
| U145 | Phosphoric acid, Lead salt | DW | + |
| U087 | Phosphorodithioic acid, O,O-diethyl-,S-methyl ester | DW | ? |
| U192 | Pronamide | DW | ? |
| U193 | 1,3-Propane sultone | DW | + |
| U140 | 1-Propanol, 2-methyl- | DW | D I |
| U002 | 2-Propanone | DW | D I |
| U113 | 2-Propenoic acid, ethyl ester | DW | D I |
| U118 | 2-Propenoic acid, 2-methyl-, ethyl ester | DW | I |
| U162 | 2-Propenoic acid, 2-methyl-, methyl ester | DW | D I |
| U155 | Pyridine, 2-[(2dimethylamino)-2-thenylamino]- | DW | D |
| U164 | 4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo- | DW | + |
| U180 | Pyrrole, tetrahydro-N-nitroso- | DW | D + |
| U200 | Reserpine | DW | ? |
| U202 | Saccharin and salts | DW | + |
| U203 | Safrole | DW | D + |
| U204 | Seleniousacid | DW | O |
| U204 | Selenium dioxide | DW | O |
| U205 | Selenium disulfide | DW | R |
| U089 | 4,4'-Stilbenediol, alpha,alpha'-diethyl- | DW | + |
| U206 | Streptozotocin | DW | + |
| U205 | Sulfur selenide | DW | R |
| U213 | Tetrahydrofuran | DW | I |
| U214 | Thallium(I) acetate | DW | ? |
| U215 | Thallium(I) carbonate | DW | ? |
| U216 | Thallium(I) chloride | DW | ? |
| U217 | Thallium(I) nitrate | DW | ? |
| U218 | Thioacetamide | DW | + |
| U244 | Thiran | DW | D |
| U221 | Toluenediamine | DW | ? |
| U222 | O-Toluidine hydrochloride | DW | D + |
| U011 | 1H-1,2,4-Triazol-3-amine | DW | D + |
| U234 | sym-Trinitrobenzene | DW | D R |
| U182 | 1,3,5-Trioxane, 2,4,5-trimethyl- | DW | D I |
| U200 | Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxy-benzoyl)oxy]-,methyl ester | DW | ? |

* EHW = Extremely Hazardous Waste
DW = Dangerous Waste
X = Toxic, Category X
A = Toxic, Category A
B = Toxic, Category B
C = Toxic, Category C
D = Toxic, Category D
H = Persistent, Halogenated Hydrocarbon
O = Corrosive
P = Persistent, Polycyclic Aromatic Hydrocarbon
+ = IARC Animal or Human, Positive or Suspected Carcinogen
I = Ignitable
R = Reactive
EP = Extraction Procedure Toxicity

TABLE 8-3

TOXIC CATEGORY DESIGNATION

| Category | $TLM_{96}$(Fish) or, Aquatic (Fish) $LC_{50}$ (ppm) | Oral (Rat) $LD_{50}$ (mg/kg) | Inhalation (Rat) $LC_{50}$ (mg/L) | Dermal (Rabbit) $LD_{50}$ (mg/kg) |
|---|---|---|---|---|
| X | <.1 | <.5 | <.02 | < 2 |
| A | .1 - 1 | .5 - 5 | .02 - .2 | 2 - 20 |
| B | 1 - 10 | 5 - 50 | .2 - 2 | 20 - 200 |
| C | 10 - 100 | 50 - 500 | 2 - 20 | 200 - 2000 |
| D | 100 - 1000 | 500 - 5000 | 20 - 200 | 2000 - 20,000 |

If the waste mixture contains one or more toxic constituents determine the equivalent concentration for the waste from the following formula:

$$\text{Equivalent Concentration}(\%) = X\% + \frac{A\%}{10} + \frac{B\%}{100} + \frac{C\%}{1000} + \frac{D\%}{10,000}$$

where (X,A,B,C,or D)% is the sum of all the concentration percentages for a particular toxic category.

Example 1. A person's waste mixture contains: Aldrin (X Category) - .01%; Diuron (B Cateogry) - 1%; Benzene (C Category) - 4%; Phenol (C Cateogry) - 2%; Cyclohexane (C Category) - 5%; Water (nontoxic) - 87%. His equivalent concentration (E.C.) would be:

$$E.C\ (\%) = .01\% + \frac{0\%}{10} + \frac{1\%}{100} + \frac{(4\% + 2\% + 5\%)}{1000} + \frac{0\%}{10,000}$$

$$= .01\% + 0\% + .01\% + .011\% + 0\% = .031\%$$

So his equivalent concentration equals .031%.

TABLE 8-4

EP TOXICITY LIST

| Dangerous Waste Number | Contaminant | EHW Maximum Concentration In Extract (mg/L) | DW Maximum Concentration In Extract (mg/L) |
|---|---|---|---|
| D004 | Arsenic | > 500 | 5 - 500 |
| D005 | Barium | > 10,000 | 100 - 10,000 |
| D006 | Cadmium | > 100 | 1 - 100 |
| D007 | Chromium | > 500 | 5 - 500 |
| D008 | Lead | > 500 | 5 - 500 |
| D009 | Mercury | > 20 | 0.2 - 20 |
| D010 | Selenium | > 100 | 1 - 100 |
| D011 | Silver | > 500 | 5 - 500 |
| D012 | Endrin | > 2 | 0.02 - 2 |
| D013 | Lindane | > 40 | 0.4 - 40 |
| D014 | Methoxychlor | > 1,000 | 10 - 1,000 |
| D015 | Toxaphene | > 50 | 0.5 - 50 |
| D016 | 2,4-D | > 1,000 | 10 - 1,000 |

# TABLE 8-5

## Dangerous waste constituents

Acetonitrile [Ethanenitrile]
Acetophenone (Ethanone, 1-phenyl)
3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts (Warfarin)
2-Acetylaminofluorene (Acetemide,N-9H-fluoren-2-yl)-)
Acetyl chloride (Ethanoyl chloride)
1-Acetyl-2-thiourea (Acetamide, N-(aminothioxomethyl)-)
Acrolein (2-Propenal)
Acrylamide (2-Propenamide)
Acrylonitrile (2-Propenenitrile)
Aflatoxins
Aldrin (1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a,8b-hexahydro-endo,exo-1,4:5,8-Dimethanonaphthalene)
Allyl alcohol (2-Propen-1-ol)
Aluminum phosphide
4-Aminobiphenyl ([1,1'-Biphenyl]-4-amine)
6-Amino-1,1a,2,8,8a,8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methyl-carbamate azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, (ester) (Mitomycin C) (Azirino[2'3':3,4]pyrrolo(1,2-a)indole-4,7-dione, 6-amino-8[((amino-carbonyl)oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8amethoxy-5-methy-)
5-(Aminomethyl)-3-isoxazolol (3(2H)-Isoxazolone, 5-(aminomethyl)-)-4 Aminopyridine (4-Pyridinamine)'
Amitrole (1H-1,2,4-Triazol-3-amine)
Aniline (Benzenamine)
Antimony and compounds, N.O.S.*
Aramite (Sulfurous acid, 2-chloroethyl- 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester)
Arsenic and compounds, N.O.S.*
Arsenic acid (Orthoarsenic acid)
Arsenic pentoxide (Arsenic (V) oxide)
Arsenic trioxide (Arsenic (III) oxide)
Auramine (Benzenamine, 4,4-carbonimidoylbis[N,N-Dimethyl-monohydrochloride)
Azaserine (L-Serine, diazoacetate (ester))
Barium and compounds, N.O.S.*
Barium cyanide
Benz[c]acridine (3,4-Benzacridine)
Benz[a]anthracene (1,2-Benzanthracene)
Benzene (Cyclohexatriene)
Benzenearsonic acid (Arsonic acid, phenyl-)
Benzene, dichloromethyl- (Benzal chloride)
Benzenethiol (Thiophenol)
Benzidine ([1,1'-Biphenyl]-4,4'diamine)
Benzo[b]fluoranthene (2,3-Benzofluoranthene)
Benzo[j]fluoranthene (7,8-Benzofluoranthene)
Benzo[a]pyrene (3,4-Benzopyrene)
p Benzoquinone (1,4-Cyclohexadienedione)
Benzotrichloride (Benzene, trichloromethyl-)
Benzyl chloride (Benzene, (chloromethyl)-)
Beryllium and compounds, N.O.S.*
Bis(2-chloroethoxy)methane (Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-])
Bis(2-chloroethyl) ether (Ethane, 1,1'-oxybis[2-chloro-])
N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornaphazine)
Bis(2-chloroisopropyl) ether (Propane, 2,2'-oxybis[2-chloro-])
Bis(chloromethyl) ether (Methane, oxybis[chloro-])
Bis(2-ethylhexyl) phthalate (1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester)
Bromoacetone (2-Propanone, 1-bromo-)
Bromomethane (Methyl bromide)
4-Bromophenyl phenyl ether (Benzene, 1-bromo-4-phenoxy-)
Brucine (Strychnidin-10-one, 2,3-dimethoxy-)
2-Butanone peroxide (Methyl ethyl ketone, peroxide)
Butyl benzyl phthalate (1,2-Benzenedicarboxylic acid, butyl phenylmethyl ester)
2-sec-Butyl-4,6-dinitrophenol (DNBP) (Phenol, 2,4-dinitro-6-(1-methylpropyl)-)
Cadmium and compounds, N.O.S.*
Calcium chromate (Chromic acid, calcium salt)
Calcium cyanide
Carbon disulfide (Carbon bisulfide)
Carbon oxyfluoride (Carbonyl fluoride)
Chloral (Acetaldehyde, trichloro-)
Chlorambucil (Butanoic acid, 4-[bis(2-chloroethyl)amino]benzene-)
Chlordane (alpha and gamma isomers) (4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3,4,7,7a-tetrahydro-) (alpha and gamma isomers)
Chlorinated benzenes, N.O.S.*
Chlorinated ethane, N.O.S.*
Chlorinated fluorocarbons, N.O.S.*
Chlorinated naphthalene, N.O.S.*
Chlorinated phenol, N.O.S.*
Chloroacetaldehyde (Acetaldehyde, chloro-)
Chloroalkyl ethers, N.O.S.*
P-Chloroaniline (Benzenamine, 4-chloro-)
Chlorobenzene (Benzene, chloro-)
Chlorobenzilate (Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-,ethyl ester)
p-Chloro-m-cresol (Phenol, 4-Chloro-3-methyl)
1-Chloro-2,3-epoxypropane (Oxirane, 2-(chloromethyl)-)
2-Chloroethyl vinyl ether (Ethene, (2-chloroethoxy)-)
Chloroform (Methane, trichloro-)
Chloromethane (Methyl chloride)
Chloromethyl methyl ether (Methane, chloromethoxy-)
2-Chloronaphthalene (Naphthalene, beta-chloro-)
2-Chlorophenol (Phenol, o-chloro-)
1-(o-Chlorophenyl)thiourea (Thiourea, (2-chlorophenyl)-)
3-Chloropropionitrile (Propanenitrile, 3-chloro-)
Chromium and compounds, N.O.S.*
Chrysene (1,2-Benzphenanthrene)
Citrus red No. 2 (2-Naphthol, 1-[(2,5-dimethoxyphenyl)azo]-)
Coal tars

TABLE 8-5

Copper cyanide
Creosote (Creosote, wood)
Cresols (Cresylic acid) (Phenol, methyl–)
Crotonaldehyde (2–Butenal)
Cyanides (soluble salts and complexes), N.O.S.*
Cyanogen (Ethanedinitrile)
Cyanogen bromide (Bromine cyanide)
Cyanogen chloride (Chlorine cyanide)
Cycasin (beta–D–Glucopyranoside, (methyl–ONN–azoxy)methyl–)
2–Cyclohexyl–4,6–dinitrophenol (Phenol, 2–cyclohexyl–4,6–dinitro–)
Cyclophosphamide (2H–1,3,2,–Oxazaphosphorine, [bis(2–chloroethyl)amino]–tetrahydro–, 2–oxide)
Daunomycin (5,12–Naphthacenedione, (8S–cis)–8–acetyl–10–[(3–amino–2,3,6–trideoxy)–alpha–L–lyxo–hexopyranosyl)oxy]–7,8,9,10–tetrahydro–6,8,11–trihydroxy–1–methoxy–)
DDD (Dichlorodiphenyldichloroethane) (Ethane, 1,1–dichloro–2,2–bis(p chlorophenyl)–)
DDE (Ethylene, 1,1–dichloro–2,2–bis(4–chlorophenyl)–)
DDT (Dichlorodiphenyltrichloroethane) (Ethane, 1,1,1–trichloro–2,2–bis(p–chlorophenyl)–)
Diallate (S–(2,3–dichloroallyl) diisopropylthiocarbamate)
Dibenz[a,h]acridine (1,2,5,6–Dibenzacridine)
Dibenz[a,j]acridine (1,2,7,8–Dibenzacridine)
Dibenz[a,h]anthracene (1,2,5,6–Dibenzanthracene)
7H–Dibenzo[c,g]carbazole (3,4,5,6–Dibenzcarbazole)
Dibenzo[a,e]pyrene (1,2,4,5–Dibenzpyrene)
Dibenzo[a,h]pyrene (1,2,5,6–Dibenzpyrene)
Dibenzo[a,i]pyrene (1,2,7,8–Dibenzpyrene)
1,2–Dibromo–3–chloropropane (Propane, 1,2–dibromo–3–chloro–)
1,2–Dibromoethane (Ethylene dibromide)
Dibromomethane (Methylene bromide)
Di–n–butyl phthalate (1,2–Benzenedicarboxylic acid, dibutyl ester)
o–Dichlorobenzene (Benzene, 1,2–dichloro–)
m–Dichlorobenzene (Benzene, 1,3–dichloro–)
p–Dichlorobenzene (Benzene, 1,4–dichloro–)
Dichlorobenzene, N.O.S.* (Benzene, dichloro–, N.O.S.*)
3,3'–Dichlorobenzidine ([1,1'–Biphenyl]–4,4'–diamine, 3,3'–dichloro–)
1,4–Dichloro–2–butene (2–Butene, 1,4–Butene, 1,4–dichloro–)
Dichlorodifluoromethane (Methane, dichlorodifluoro–)
1,1–Dichloroethane (Ethylidene dichloride)
1,2–Dichloroethane (Ethylene dichloride)
trans–1,2–Dichloroethene (1,2–Dichloroethylene)
Dichloroethylene, N.O.S.* (Ethene, dichloro–, N.O.S.*)
1,1–Dichloroethylene (Ethene, 1,1–dichloro–)
Dichloromethane (Methylene chloride)
2,4–Dichlorophenol (Phenol, 2,4–dichloro–)
2,6–Dichlorophenol (Phenol, 2,6–dichloro)
2,4–Dichlorophenoxyacetic acid (2,4–D), salts and esters (Acetic acid, 2,4–dichlorophenoxy–, salts and esters)
Dichlorophenylarsine (Phenyl dichloroarsine)
Dichloropropane, N.O.S.* (Propane, dichloro–, N.O.S.*)
1,2–Dichloropropane (Propylene dichloride)
Dichloropropanol, N.O.S.* (Propanol, dichloro–, N.O.S.*)
Dichloropropene, N.O.S.* (Propene, dichloro–, N.O.S.*)
1,3–Dichloropropene, (1–Propene, 1,3–dichloro–)
Dieldrin (1,2,3,4,10,10–hexachloro–6,7–epoxy–1,4,4a,5,6,7,8,8a–octa–hydro–endo, exo–1,4:5,8–Dimethanonaphthalene)
1,2:3,4–Diepoxybutane (2,2'–Bioxirane)
Diethylarsine (Arsine, diethyl–)
N,N–Diethylhydrazine (Hydrazine, 1,2–diethyl)
O,O–Diethyl S–methyl ester of phosphorodithioic acid (Phosphorodithioic acid, O,O–diethyl S–methyl ester
O,O–Diethylphosphoric acid, O–p–nitrophenyl ester (Phosphoric acid, diethyl p–nitrophenyl ester)
Diethyl phthalate (1,2–Benzenedicarboxylic acid, diethyl ester)
O,O–Diethyl O–2–pyrazinyl phosphorothioate (Phosphorothioic acid, O,O–diethyl O–pyrazinyl ester
Diethylstilbesterol (4,4'–Stilbenediol, alpha,alpha–diethyl, bis(dihydrogen phosphate, (E)–)
Dihydrosafrole (Benzene, 1,2–methylenedioxy–4–propyl–)
3,4–Dihydroxy–alpha–(methylamino)methyl benzyl alcohol (1,2–Benzenediol, 4–[1–hydroxy–2–(methylamino)ethyl]–)
Diisopropylfluorophosphate (DFP) (Phosphorofluoridic acid, bis(1–methylethyl) ester)
Dimethoate (Phosphorodithioic acid, O,O–dimethyl S–[2–(methylamino)–2–oxoethyl] ester
3,3'–Dimethoxybenzidine ([1,1'–Biphenyl]–4,4'diamine, 3–3'dimethoxy–)
p–Dimethylaminoazobenzene (Benzenamine, N,N–dimethyl–4–(phenylazo)–)
7,12–Dimethylbenz[a]anthracene (1,2–Benzanthracene, 7,12–dimethyl–)
3,3'Dimethylbenzidine ([1,1'–Biphenyl]–4,4'–diamine, 3,3'–dimethyl–)
Dimethylcarbamoyl chloride (Carbamoyl chloride, dimethyl–)
1,1–Dimethylhydrazine (Hydrazine, 1,1–dimethyl–)

TABLE 8-5

1,2-Dimethylhydrazine (Hydrazine, 1,2-dimethyl-)
3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino) carbonyl]oxime (Thiofanox)
alpha,alpha-Dimethylphenethylamine (Ethanamine, 1,1-dimethyl-2-phenyl)
2,4-Dimethylphenol (Phenol, 2,4-dimethyl-)
Dimethyl phthalate (1,2-Benzenedicarboxylic, acid, dimethyl ester)
Dimethyl sulfate (Sulfuric acid, dimethyl ester)
Dinitrobenzene, N.O.S.* (Benzene, dinitro-, N.O.S.*
4,6-Dinitro-o-cresol and salts (Phenol, 2,4-dinitro-6-methyl-, and salts)
2,4-Dinitrophenol (Phenol, 2,4-dinitro-)
2,4-Dinitrotoluene (Benezene, 1-methyl-2,4-dinitro-)
2,6-Dinitrotoluene (Benzene,1-methyl-2,6-dinitro-)
Di-n-octyl phthalate (1,2-Benzenedicarbozylic acid, dioctyl ester)
1,4-Dioxane (1,4-Diethylene oxide)
Diphenylamine (Benzenamine, N-Phenyl-)
1,2-Diphenylhydrazine (Hydrazine, 1,2-diphenyl-)
Di-n-propylnitrosamine (N-Nitroso-di-n-propylamine)
Disulfoton (O,O-diethyl S-[2-(ethylthio)ethyl] phosphorodithioate)
2,4-Dithiobiuret (Thioimidodicarbonic diaminde)
Endosulfan (5-Norbornene, 2,3-dimethanol, 1,4,5,6,7,7-hexachloro-, cyclic sulfite)
Endrin and metabolites (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene, and metabolites)
Ethyl carbamate (Urethan) (Carbamic acid, ethyl ester)
Ethyl cyanide (propanenitrile)
Ethylenebisdithiocarbamic acid, salts and esters (1,2-Ethanediylbiscarbamodithioic acid, salts and esters.
Ethyleneimine (Aziridine)
Ethylene oxide (Oxirane)
Ethylenethiourea (2-Imidazolidinethione)
Ethylmethacrylate (2-Propenoic acid, 2-methyl-, ethyl ester)
Ethyl methanesulfonate (Methanesulfonic acid, ethyl ester)
Fluoranthene (Benzo[j,k]fluorene)
Fluorine
2-Fluoroacetamide (Acetamide, 2-fluoro-)
Fluoroacetic acid, sodium salt (Acetic acid, fluoro-, sodium salt)
Formaldehyde (Methylene, oxide)
Formic acid (Methanoic acid)
Glycidylaldehyde (1-Propanol-2-3-epoxy)
Halomethane, N.O.S.*
Heptachlor (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-)
Heptachlor epoxide (alpha, beta, and gamma isomers) (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-2,3-epoxy-3a,4,7,7-tetrahydro-, alpha, beta and gamma isomers)
Hexachlorobenzene (Benzene, hexachloro-)
Hexachlorobutadiene (1,3-Butadiene, 1,1,2,3,4,4-hexachloro-)
Hexachlorocyclohexane (all isomers) (Lindane and isomers)
Hexachlorocylopentadiene (1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-)
Hexachloroethane (Ethane, 1,1,1,2,2,2-hexachloro-)
1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo,endo-dimethanonphthalene (Hexachlorohexahydro-endo,endo-dimethanonaphthalene)
Hexachlorophene (2,2'-Methylenebis(3,4,6-trichlorophenol))
Hexachloropropene (1-Propene, 1,1,2,3,3,3-hexachloro-)
Hexaethyl tetraphosphate (Tetraphosphoric acid, hexaethyl ester)
Hydrazine (Diamine)
Hydrocyanic acid (Hydrogen cyanide)
Hydrofluoric acid (Hydrogen fluoride)
Hydrogen sulfide (Sulfur hydride)
Hydroxydimethylarsine oxide (Cacodylic acid)
Indeno(1,2,3-cd)pyrene (1,10-(1,2-phenylene)pyrene)
Iodomethane (Methyl iodide)
Iron Dextran (Ferric dextran)
Isocyanic acid, methyl ester (Methyl isocyanate)
Isobutyl alcohol (1-Propanol, 2-methyl-)
Isosafrole (Benzene, 1,2-methylenedioxy-4-allyl-)
Kepone (Decachlorooctahydro-1,3,4-Methano-2H-cyclobuta[cd]pentalen-2-one)
Lasiocarpine (2-Butenoic acid, 2-methyl-,7-[(2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy)methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester)
Lead and compounds, N.O.S.*
Lead acetate (Acetic acid, lead salt)
Lead phosphate (Phosphoric acid, lead salt)
Lead subacetate (Lead, bis(acetato-O)tetrahydroxytri-)
Maleic anhydride (2,5-Furandione)
Maleic hydrazide (1,2-Dihydro-3,6-pyridazinedione)
Malononitrile (Propanedinitrile)
Melphalan (Alanine, 3-[p-bis(2-chloroethyl)amino]phenyl-,L-)
Mercury Fulminate (Fulminic acid, mercury

TABLE 8-5

salt)
Mercury and compounds, N.O.S.*
Methacrylonitrile (2-Propenenitrile, 2-methyl-)
Methanethiol (Thiomethanol)
Methapyrilene (Pyridine, 2-[(2-dimethylamino)ethyl]-2-thenylamino-)
Metholonyl (Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-,methyl ester
Methoxychlor (Ethane, 1,1,1-trichloro-2,2'-bis(p-methoxyphenyl)-)
2-Methylaziridine (1,2-Propylenimine)
3-Methylcholanthrene (Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-)
Methyl chlorocarbonate (Carbonochloridic acid, methyl ester)
4,4'-Methylenebis(2-chloroaniline) (Benzenamine, 4,4'-methylenebis-(2-chloro-)
Methyl ethyl ketone (MEK) (2-Butanone)
Methyl hydrazine (Hydrazine, methyl-)
2-Methyllactonitrile (Propanenitrile, 2-hydroxy-2-methyl-)
Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)
Methyl methanesulfonate (Methanesulfonic acid, methyl ester)
2-Methyl-2-(methylthio)propionaldehyde-o-(methylcarbonyl) oxime (Propanal,2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime)
N-Methyl-N'-nitro-N-nitrosoguanidine (Guanidine, N-nitros-N-methyl-N'nitro-)
Methyl parathion (O,O-dimethyl O-(4-nitrophenyl) phosphorothioate)
Methylthiouracil (4-1H-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-)
Mustard gas (Sulfide, bis(2-chloroethyl)-)
Naphthalene
1,4-Naphthoquinone (1,4-Naphthalenedione)
1-Naphthylamine (alpha-Naphthylamine)
2-Naphthylamine (beta-Naphthylamine)
1-Naphthyl-2-thiourea (Thiourea, 1-naphthalenyl-)
Nickel and compounds, N.O.S.*
Nickel carbonyl (Nickel tetracarbonyl)
Nickel cyanide (nickel (II) cyanide)
Nicotine and salts, Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts)
Nitric oxide (Nitrogen (II) oxide)
p-Nitroaniline (Benzenamine, 4-nitro-)
Nitrobenzine (Benzene, nitro-)
Nitrogen dioxide (Nitrogen (IV) oxide)
Nitrogen mustard and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)
Nitrogen mustard N-Oxide and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)
Nitroglycerine (1,2,3-Propanetriol, trinitrate)
4-Nitrophenol (Phenol, 4-nitro-)
4-Nitroquinoline-1-oxide (Quinoline, 4-nitro-1-oxide-)
Nitrosamine, N.O.S.*
N-Nitrosodi-n-butylamine (1-Butanamine, N-butyl-N-nitroso-)
N-Nitrosodiethanolamine (Ethanol, 2,2'-(nitrosoimino)bis-)
N-Nitrosodiethylamine (Ethanamine, N-Ethyl-N-nitroso-)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitroso-N-ethylurea (Carbamide, N-ethyl-N-nitroso-)
N-Nitrosomethylethylamine (Ethanamine, N-methyl-N-nitroso-)
N-Nitroso-N-methylurea (Carbamide, N-methyl-N-nitroso-)
N-Nitroso-N-methylurethane (Carbamic acid, methylnitroso-, ethyl ester)
N-Nitrosomethylvinylamine (Ethenamine, N-methyl-N-nitroso-)
N-Nitrosomorpholine (Morpholine, N-nitroso-)
N-Nitrosonornicotine (Nornicotine, N-nitroso-)
N-Nitrosopiperidine (Pyridine, hexahydro-, N-nitroso-)
Nitrosopyrrolidine (pyrrole, tetrahydro-, N-nitroso-)
N-Nitrososarcosine (Sarcosine, N-nitroso-)
5-Nitro-o-toluidine (Benzenamine, 2-methyl-5-nitro-)
Octamethylpyrophosphoramide (Diphosphoraminde, octamethyl-)
Osmium tetroxide (Osmium (VIII) oxide)
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid (Endothal)
Paraldehyde (1,3,5-Trioxane, 2,4,6-trimethyl-)
Parathion (Phosphorothioic acid, O,O-diethyl O-(p-nitrophenyl) ester
Pentachlorobenzene (Benzene, pentachloro-)
Pentachloroethane (Ethane, pentachloro-)
Pentachloronitrobenzene (PCNB) (Benzene, pentachloronitro-)
Pentachlorophenol (Phenol, pentachloro-)
Phenacetin (Acetamide, N-(4-ethoxyphenyl)-)
Phenol (Benzene, hydroxy-)
Phenylenediamine (Benzenediamine)
Phenylmercury acetate (Mercury, acetatophenyl-)
N-Phenylthiourea (Thiourea, phenyl-)
Phosgene (Carbonyl chloride)
Phosphine (Hydrogen phosphide)
Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester (Phorate)
Phosphorothioic acid, O,O-dimethyl O-[p-((dimethylamino)sulfonyl)phenyl] ester (Famphur)
Phthalic acid esters, N.O.S.* (Benzene, 1,2-dicarboxylic acid, esters, N.O.S.*
Phthalic anhydride (1,2-Benzenedicarboxylic acid anhydride)
2-Picoline (Pyridine, 2-methyl-)

TABLE 8-5

Polychlorinated biphenyl, N.O.S.*
Potassium cyanide
Potassium silver cyanide (Argentate(1-), dicyano-, potassium)
Pronamide (3,5-Dichloro-N-(1,1-dimethyl-2-propynyl)benzamide)
1,3-Propanesultone (1,2-Oxathiolane, 2,2-dioxide)
n-Propylamine (1-Propane)
Propylthiouracil (Undecamethylenediamine, N,N'-bis(2-chlorobenzyl)-, dihydrochloride)
2-Propyn-1-ol (Propargyl alcohol)
Pyridine
Reserpine (Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester)
Resorcinol (1,3-Benzenediol)
Saccharin and salts (1,2-Benzoisothiazolin-3-one, 1,1-dioxide, and salts)
Safrol (Benzene, 1,2-methylenedioxy-4-allyl-)
Selenious acid (Selenium dioxide)
Selenium and compounds, N.O.S.*
Selenium sulfide (Sulfur selenide)
Selenourea (Carbamimidoselenoic acid)
Silver and compounds, N.O.S.*
Silver cyanide
Sodium cyanide
Streptozotocin (D-Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-)
Strontium sulfide
Strychnine and salts (Strychnidin-10-one, and salts)
1,2,4,5-Tetrachlorobenzene (Benzene, 1,2,4,5-tetrachloro-)
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) Dibenzo-p-dioxin, 2,3,7,8-tetrachloro-)
Tetrachloroethane, N.O.S.* (Ethane, tetrachloro-, N.O.S.*)
1,1,1,2-Tetrachlorethane (Ethane, 1,1,1,2-tetrachloro-)
1,1,2,2-Tetrachlorethane (Ethane, 1,1,2,2-tetrachloro-)
Tetrachlorethylene (Ethane, 1,1,2,2-tetrachloro-)[1]
Tetrachloromethane (Carbon tetrachloride)
2,3,4,6-Tetrachlorophenol (Phenol,2,3,4,6-tetrachloro-)
Tetraethyldithiopyrophosphate (Dithiopyrophosphoric acid, tetraethyl-ester)
Tetraethyl lead (Plumbane, tetraethyl-)
Tetraethylpyrophosphate (Pyrophosphoric acide, tetraethyl ester)
Tetranitromethane (Methane, tetranitro-)
Thallium and compounds, N.O.S.*
Thallic oxide (Thallium (III) oxide)
Thallium (I) acetate (Acetic acid, thallium (I) salt)
Thallium (I) carbonate (Carbonic acid, dithallium (I) salt)
Thallium (I) chloride
Thallium (I) nitrate (Nitric acid, thallium (I) salt)
Thallium selenite
Thallium (I) sulfate (Sulfuric acid, thallium (I) salt)
Thioacetamide (Ethanethioamide)
Thiosemicarbazide (Hydrazinecarbothioamide)
Thiourea (Carbamide thio-)
Thiuram (Bis(dimethylthiocarbamoyl) disulfide)
Toluene (Benzene, methyl-)
Toluenediamine (Diaminotoluene)
o-Toluidine hydrochloride (Benzenamine, 2-methyl-, hydrochloride)
Tolylene diisocyanate (Benzene, 1,3-diisocyanatomethyl-)
Toxaphene (Camphene, octachloro-)
Tribromomethane (Bromoform)
1,2,4-Trichlorobenzene (Benzene, 1,2,4-trichloro-)
1,1,1-Trichloroethane (Methyl chloroform)
1,1,2-Trichloroethane (Ethane, 1,1,2-trichloro-)
Trichloroethene (Trichloroethylene)
Trichloromethanethiol (Methanethiol, trichloro-)
Trichloromonofluoromethane (Methane, trichlorofluoro-)
2,4,5-Trichlorophenol (Phenol, 2,4,5-trichloro-)
2,4,6-Trichlorophenol (Phenol, 2,4,6-trichloro-)
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T) (Acetic acid, 2,4,5-trichlorophenoxy-)
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP) (Silvex) (Porpionoic acid, 2-(2,4,5-trichlorophenoxyl)-)
Trichloropropane, N.O.S.* (Propane, trichloro-, N.O.S.*
1,2,3-Trichloropropane (Propane, 1,2,3-trichloro-)
O,O,O-Triethyl phosphorothioate (Phosphorothioic acid, O,O,O-triethyl ester)
sym-Trinitrobenzene (Benzene, 1,3,5-trinitro-)
Tris(1-aziridinyl) phosphine sulfide (Phosphine sulfide, tris(1-aziridinyl-)
Tris(2,3-dibromopropyl) phosphate (1-Propanol, 2,3-dibromo-, phosphate)
Trypan blue (2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl(1,1'-biphenyl)-4,4'-diyl)bis(azo)]bis(5-amino-4-hydroxy-, tetrasodium salt)
Uracil mustard (Uracil 5-[bis(2-chlorethyl)amino]-)
Vanadic acid, ammonium salt (ammonium vanadate)
Vanadium pentoxide (Vanadium (V) oxide)
Vinyl chloride (Ethane, chloro-)
Zinc cyanide
Zinc phosphide

*The abbreviation N.O.S. signifies those members of the general class "not otherwise specified" by name in this listing.

# APPENDIX H-3

## NON-RADIOACTIVE DANGEROUS WASTE DISPOSAL INSTRUCTIONS FOR GENERAL CHEMICAL CLASSES

Attachment 1

# NON-RADIOACTIVE DANGEROUS WASTE DISPOSAL INSTRUCTIONS FOR GENERAL CHEMICAL CLASSES

## Janitorial Products

These materials used in standard ways in janitorial duties are not defined as waste. The only time these materials should potentially become dangerous waste is when any quantity must be excessed or disposed rather than being used up.

Assume that all of these products could be Dangerous Wastes (DW) or Extremely Hazardous Wastes (EHW) and handle accordingly. Call Waste Systems Engineering (WSE) if there are questions.

## Solvents, Degreasing Agents and Cleaning Agents

Assume that all these materials are either DW or EHW. The only case where these chemicals would not be designated as DW or EHW is where a process resulted in a very dilute solution. If this circumstance applies in your situation, consult with WSE. Deliberate dilution to remove the DW or EHW designation is not permitted. In many situations where small amounts are used for cleaning, the material evaporates completely and obviously there is no waste. Deliberately evaporating material for disposal is not permitted.

Common examples at WHC are:

| | |
|---|---|
| Xylene | EHW |
| Toluene | EHW |
| Trichloroethane | EHW |
| Alcohols | DW |
| Acetone | DW |
| Perchlorethylene | EHW |
| Carbon Tetrachloride | EHW |

(A suitable substitute is being sought so the use of carbon tet can be discontinued.)

Even if your solvent does not specifically appear here, it is almost certainly a DW or EHW and should be handled as such.

## Paint Materials

Left over thinners, used cleaners and other waste painting supplies should be assumed to be DW or EHW and handled as such. Paints would not ordinarily be disposed and WSE should be consulted as the need arises for proper designation.

Lubricants, Fuel Oil, Gasolines, Kerosine, etc.

These products are managed under different regulations and disposal requirements continue unchanged.

Many products used as greases, cutting fluids, etc., are not petroleum products and must be managed in accordance with the dangerous waste regulations. Assume these products are DW or EHW.

Biocides

These materials include insecticides, herbacides, rodenticides, and algacides. Other regulations govern the proper use of these materials. Only if an excess quantity must be disposed will the dangerous waste regulations apply. Consult WSE whenever disposal of these materials is necessary.

Sewer Discharges

These chemicals are discharged to the sewer system from air cleaning systems, cooling towers, cooling systems, boilers, etc. Usually the chemicals are diluted in water and may be used for control of algae growth, water chemistry, corrosion, etc.

These discharges must be individually analyzed for compliance to the regulations. E&RE is the contact point.

Refrigerants and Coolants

Ethylene Glycol is designated as a DW. Used material must be collected (preferably in 55 gallon drums) and given to WSO for disposal.

Freon may be not regulated DW or EHW, depending on composition. Consult WSE.

Consult WSE for other refrigerants/coolants.

Generally Used Acids and Bases

These materials include hydrochloric, nitric, sulfuric acids and sodium and ammonium hydroxide. The requirements apply even if your particular acid or base is not listed. These used materials must generally be collected unless used in very dilute concentrations. If you have very dilute materials, consult with WSE. Otherwise, manage these wastes as DW.

Battery acid is regulated as a DW for both acidity and lead content.

Originally, the plan was to neutralize these materials, but after considering the toxicity of the materials and potential salts as defined by the regulations, it appears that this will not be productive.

## Miscellaneous Materials

These materials do not necessarily fall into any of the above categories and may be used by many different groups. The following waste materials must be managed as DW or EHW:

| | |
|---|---|
| Mercury Compounds | EHW |
| Dowanol | DW |
| NaK | DW |
| Alkali Metals | DW |
| Lead (includes battery acid) | EHW |
| Silver | EHW |
| Cadmium | EHW |
| All Heavy Metals | DW or EHW |

## Laboratory Chemicals

These are any chemicals used in small quantities in laboratories. Essentially all of these chemicals are DW or EHW in most situations and especially in the form in inventory. Unless the laboratory process results in a very dilute mixture, these wastes should be managed as DW and EHW. Consult WSE for dilute mixtures. The term dilute mixture in this context means a small amount of chemical in something like water. A mixture made up of small amounts of many different chemicals is still DW or EHW. Use the list of EHW waste given in Attachment 2 to designate EHW. Treat everything else as DW.

## Other Chemicals

If you use or dispose of chemicals which do not fit in any of the above categories and are not photographic chemicals described on the following pages, call WSE.

# APPENDIX H-4

## GENERAL INSTRUCTIONS FOR IMPLEMENTATION OF THE WASHINGTON STATE DANGEROUS WASTE REGULATIONS

Attachment 2

GENERAL INSTRUCTIONS FOR IMPLEMENTATION OF THE WASHINGTON STATE DANGEROUS WASTE REGULATIONS

All non-radioactive chemical wastes must be reported to Waste Systems Engineering (WSE). This includes anything going to process sewers, sanitary sewers, load luggers or any other disposal system.

Designation of the chemical waste streams as "Dangerous", "Extremely Hazardous" or non-dangerous shall only be performed by the manager of WSE or the committee set up by WSE for that purpose.

> The terms "Dangerous Waste" and "Extremely Hazardous Waste" are defined in the Washington Administrative Code (WAC). The "designation" process must be performed as specified in the WAC.

Preliminary Dangerous Waste or Excess Chemical Handling Procedures

Questions should be directed to WSE 376-5891 or 376-3014 or Waste Systems Operations (WSO) 376-3012.

All chemicals should be reused, excessed or recycled if possible. WSE and WSO will help with this.

Procedures must be written or amended to include proper handling of waste streams.

After WSE designates the waste as dangerous or extremely hazardous waste, the disposal procedure is to submit a "Request to Dispose of Nonradioactive Hazardous Waste" form to WSO with Sections I and II completed. A description and instructions are attached.

Containers

Try to use the same or same type of containers in which new chemicals arrive. Use of other containers, or containers greater in size than a 55 gallon drum, requires approval of WSE.

The containers must be sealed (i.e. screwcap) and essentially full.

Do not mix incompatible chemicals.

Suggested mixtures
* Acids (pH 2)
* Bases (pH 12.5)
* Mixed organics (chlorinated hydrocarbons separate)
* Mixed solvents
* Others as required

Do not mix Extremely Hazardous Waste (EHW) and Dangerous Wastes (DW). See attached list. THE LISTS DO NOT INCLUDE EVERYTHING. Other methods must be used to designate the waste if the chemical is not included on the list.

Contact WSE if there are any questions.

Container Labeling

Containers must have labels with the following:

Chemical names and amounts.

Date of start of accumulation in container. (WHC has 90 days from accumulation/start to dispose of waste.)

Label should clearly state the general waste type (i.e. acids) and whether the waste is EHW or DW.

Suggest using some kind of self sticking label. (WSE is presently investigating the use of standardized labels.)

Waste from certain buildings will require a release from Operational Health Physics (OHP).

Records

Keep records of chemical usage and disposal. It is not yet clear how detailed these records must be. Do the best that's reasonable in your situation. Discuss the situation with WSE.

Pickup Procedure

Set up a convenient place for holding waste for pickup by WSO.

Set up a frequency for pickup. WSE suggests a maximum frequency of once every 30 days to allow for WSO to consolidate wastes and obtain RHO approvals to meet the 90 day limit.

Call WSO for infrequent waste generation pickups.

Cost

Cost will be handled in a manner similar to that for radioactive wastes.

Costs will include RHO charges plus a WSO handling charge. WSO will try to consolidate waste containers in drums to reduce overall costs.

## Audit

There will be a DOE audit toward the end of February. Training will be an important issue with the auditors. Make sure you have documentation of the training given to your personnel.

## Spills

If chemicals are spilled such that simple and complete cleanup and recovery are not possible, WSE must be notified ASAP. The state and DOE have stringent reporting requirements for spills.

# NEW FORM

WESTINGHOUSE HANFORD COMPANY

WASTE SYSTEM OPERATIONS
REQUEST TO DISPOSE OF NONRADIOACTIVE MATERIAL

CONTROL NUMBER

page __ of __

I. GENERATOR: The Generator should complete Part I and give to truck driver.

A. Generator's Name: ______________ Phone: ______________ Dept. ________ Cost Code: ______________

B. Waste Description: (If more than five items, attach additional sheets) If empty, list last contents. If store stock items, list stock number and generic name.

| Generic Name | Total Quantity | Type of Container | Number of Containers | (Check One) Sol. | Liq. | Gas | Empty | Container Number |
|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |
| 5. | | | | | | | | |
| 6. | | | | | | | | |
| 7. | | | | | | | | |

C. Have efforts been made to recycle (e.g., excess)? ______________

D. Pickup Location: ______________ Deliver to: ______________

E. Containers closed and in good condition, for transport and storage.

"I hereby certify that Part One of this form has been completed to the best of my knowledge."

Generator's Signature: ______________ Date: ______________

Notify storage location before shipping

II. RADIATION MONITORING This is not an off-site release:

Surface

☐ ≤ 300 c/m $\beta\gamma$ ☐ ≤ 50 c/m $\alpha$

Smears of Outer Container

☐ ≤ 22 dpm $\beta\gamma/cm^2$

☐ ≤ 2.2 dpm $\alpha/cm^2$

Radiation Monitoring

______________

Signature

Date: ______________

III. TRANSPORTED by: ______________ delivered to: ______________

Driver Signature

Date: ______________ Intra area shipments only.

IV. STORAGE AREA Received by: ______________ Location: ______________

Date: ______________. Send white & Blue copies to WSO, W/A-70.

V. WASTE SYSTEMS OPERATIONS Request received date: ________ Disposal Date: ______________

Samples taken by: ______________ Deliver to: ______________ Date: ______________

Radioactivity results date: ______________ delivered to HEHF date: ______________ HEHF results date: ______________

VI. WASTE SYSTEMS ENGINEERING information received date: ________ RHO request date: ________ By: ________

Reviewed by ______________ Date: ______________ RHO Disposal Number: ________ Date: ________

☐ Regulated ______________

☐ Non Regulated ______________ Remarks ______________

BC-7900-030 (8-86)

White — Waste Systems Operations Blue — Waste Systems Engineering Green — Storage
Canary — Transportation Pink — Radiation Monitors Goldenrod — Waste Generator

This form is designed to track material from generator to final disposal. Each part will be completed by the organization performing their task.

Forms are available from Waste Systems Operations (WSO), 376-3012.

| WESTINGHOUSE HANFORD COMPANY | WASTE SYSTEM OPERATIONS REQUEST TO DISPOSE OF NONRADIOACTIVE MATERIAL | CONTROL NUMBER 1 |
|---|---|---|

I. GENERATOR: The Generator should complete Part I and give to truck driver. page __ of __

A. Generator's Name: 2 ____ Phone: ____ Dept. ____ Cost Code: ____

B. Waste Description: (If more than five items, attach additional sheets) If empty, list last contents. If store stock items, list stock number and generic name.

| | Generic Name | Total Quantity | Type of Container | Number of Containers | (Check One) Sol. | Liq. | Gas | Empty | Container Number |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 3 | 4 | 5 | 6 | | 7 | | | 8 |
| 2. | | | | | | | | | |
| 3. | | | | | | | | | |
| 4. | | | | | | | | | |
| 5. | | | | | | | | | |
| 6. | | | | | | | | | |
| 7. | | | | | | | | | |

C. Have efforts been made to recycle (e.g., excess)? 9 ____

D. Pickup Location: 10 ____ Deliver to: ____

E. Containers closed and in good condition, for transport and storage. 11

"I hereby certify that Part One of this form has been completed to the best of my knowledge."

Generator's Signature: 12 ____ Date: ____

Notify storage location before shipping

1 - Control Number will be assigned by Waste Systems Operations (WSO) after they have received the Request.

PART I of this form is to be completed by the generator of the material.

2 - Generator's name, phone, dept. and cost code, this information will be used for all charges relating to material disposal. (this may be as high as $10/lb)
3 - Generic Name - give generic name if known, maybe manufacture's name and product name or number.
4 - Total Quantity of material in containers in pounds or gallons, if empty, just put an "M".
5 - Type of Container - this may also be size of container or package (if containers of different sizes, list as another item)
6 - Number of containers or packages of the same size.
7 - Check physical form of material, check empty only if container has no free flowing material remaining.
8 - Container Numbers will be assigned by WSO.
9 - Efforts to recycle or excess material, the generator should exhaust all efforts to excess, give away or reuse material first.
10 - Give location of material and where it is to be delivered, for the truck driver, if material is to be moved, inter-area shipments shall be per MG-137, Section 14.
11 - All containers to be moved or transported must be in condition that they will not present a hazard during handling and transporting.
12 - Generator's Signature - after reviewing form, sign off. If the material is to be moved intra-area, contact the approved storage location before calling for transportation, keep bottom copy of form and give the rest of them to truck driver. If it is not to be moved, send forms to WSO at W/A-70.

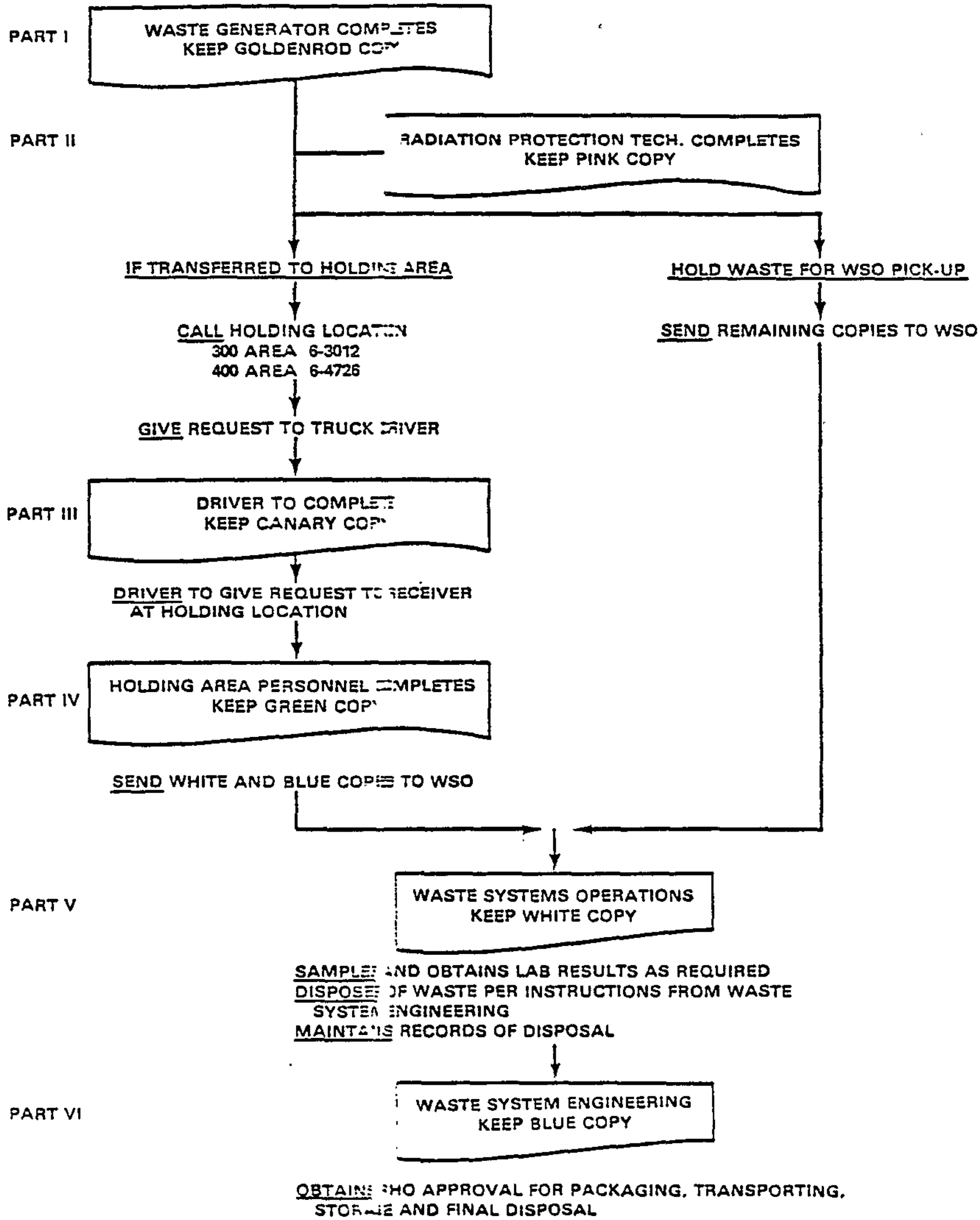
WESTINGHOUSE HANFORD
WASTE SYSTEMS ENGINEERING

INSTRUCTIONS

# REQUEST TO DISPOSE OF NONRADIOACTIVE MATERIAL

(FORM BC-7900-020)

ROUTING




HEDL 8411-200

II. RADIATION MONITORING This is not an off-site release:

Surface

☐ ≤ 300 c/mβγ ☐ ≤ 50 c/mα

Smears of Outer Container

☐ ≤ 22 dpm $\beta\gamma/cm^2$

☐ ≤ 2.2 dpm $\alpha/cm^2$

Radiation Monitoring

______________________

Signature

Date: ______________

PART II Radiation Monitoring: This is not an offsite release. This part only releases material for intra-area movement. The limits set here are about the detection limits of a portable meter. Keep Pink copy.

III. TRANSPORTED by: ______________ delivered to: ______________

Driver Signature

Date: ______________ Intra area shipments only.

PART III Transported by: Signature of driver and delivered to - Intra-area only - such as 400 Area only, not between areas such as 300 to 400. Check containers, if you feel they are not safe to transport, refuse them. Keep Canary copy.

IV. STORAGE AREA Received by: ______________ Location: ______________

Date: ______________. Send white & Blue copies to WSO, W/A-70.

PART IV Storage Area: Signature, location and date of person receiving material. Check containers, if you feel they are not in good enough condition for safe storage, refuse to accept and return to generator. Send White and Blue copies of this form to WSO. Keep Green copy.

V. WASTE SYSTEMS OPERATIONS Request received date: ______________ Disposal Date: ______________

Samples taken by: ______________ Deliver to: ______________ Date: ______________

Radioactivity results date: ______________ delivered to HEHF date: ______________ HEHF results date: ______________

PART V Waste Systems Operations: Date copies received from staging area personnel. Final disposal date when material has been removed from staging to disposal (disposed of offsite, sent to RHO, excess or reissued) . WSO will number containers as required, using the Control Number assigned to the Request as the first 4 digits and the container number as assigned. Signature of person that took samples (if required) where samples were delivered and date. Date results were received on radioactivity, date sample delivered to HEHF (if required) and date of HEHF results received.

VI. WASTE SYSTEMS ENGINEERING information received date: ______________ RHO request date: ______________ By: ______________

Reviewed by ______________ Date: ______________ RHO Disposal Number: ______________ Date: ______________

☐ Regulated ______________

☐ Non Regulated ______________ Remarks ______________

PART VI Waste Systems Engineering: Date Blue copy received or date work was started on this Request. Signature of group that may have to review Request to determine what class material fits into and results of findings. RHO request date and Disposal number (if required).

# SECTION I

# CLOSURE AND POST-CLOSURE REQUIREMENTS

## I-1 CLOSURE PERFORMANCE STANDARD FOR THE 105-DR LARGE SODIUM FIRE FACILITY, 221-T CONTAINMENT SYSTEMS TEST FACILITY, 324 SODIUM REMOVAL PILOT PLANT, 437 MAINTENANCE AND STORAGE FACILITY, AND 3718-F ALKALI METAL TREATMENT FACILITY

### I-1a Closure Performance Standard

The Alkali Metal Facilities will be closed in a manner that protects public health and the environment, and minimizes or eleminates escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or to the atmosphere.

The DOE-RL will initiate and monitor the closure activities. Personnel involved in the closure activities will be under the supervision of a person knowledgeable in the safe handling of alkali metals. Appropriate protective clothing, if required, will be specified to ensure personnel protection. Upon completion of the closure activities, all alkali metal wastes will have been reacted and reaction byproduct materials will have been removed. All regulated contaminated materials (if any) will be removed within 180 days of receiving the last shipment of waste.

### I-1b Partial and Final Closure Activities

The locations at which official copies of the Alkali Metal Facilities Closure Plan are kept are given in Appendix I-1. The person responsible for storing and updating these copies of the plan is presented in Appendix I-2. Upon completion of closure, closure activities will be certified in accordance with Appendix I-3. DOE-RL does not expect to perform a partial closure of any alkali metal treatment facility. Therefore, all closure activity will be for final closure.

At least 180 days prior to the date of receiving the last regulated waste shipment, DOE-RL will notify the appropriate regulating agency of the intent to close. Within 30 days after receiving the last waste shipment, DOE-RL will direct one of the Site Contractors to implement this approved closure plan. Within 60 days after receiving the last waste shipment, all unreacted alkali metals will be reacted. Within 120 days after receiving the last waste shipment, the facility will be washed down with water, and alkali metal contaminated scrap (if any) shall be placed in drums and transported to an appropriate treatment/storage/disposal (TSD) facility. The ventilation system will be thoroughly cleaned with water to remove reaction byproducts.

I-1c Maximum Waste Inventory

105-DR Large Sodium Fire Facility, 221-T Containment Systems Test Facility, and 3718-F Alkali Metal Treatment Facility

The maximum storage capacity at 3718F Alkali Metal Treatment Facility is 2,000 liters. The maximum storage capacity at 105-DR Containment Systems Test Facility is 20,000 liters. Alkali metal inventory shall not exceed the maximum storage capacity. 221-T, MASF, and 324 SRPP are treatment facilities and as such will not have an inventory of alkali metal at the time of closure.

I-1d Inventory Removal, Disposal or Decontamination of Equipment

The storage areas are a portion of 3718-F and 105-DR. Only steel containers of unreacted alkali metals awaiting treatment are stored in these areas. Due to the reactive nature of alkali metals, the containers are not opened in the storage area. Within 60 days after initiating closure of the facility, all alkali metals in storage will have been reacted.

The alkali metal treatment facilities at 105-DR, 221-T, 324, 437, and 3718-F react alkali metals to a thermodynamically stable state. Byproducts of the reaction process are water-soluable alkali metal oxides and hydroxides. These reaction byproducts will be removed from equipment and facility surfaces using water washdowns and rinses. Tools and equipment utilized in the final closure will not be exposed to unreacted alkali metals. Tools and equipment exposed to alkali metal reaction byproducts will be washed with water.

Removal of radioactively contaminated equipment is governed by DOE 5820.2, "Radioactive Waste Management," Chapter V, "Decontamination and Decommissioning of Surplus Facilities."

I-1e Closure of Disposal Units

Not applicable.

I-1f Continuance of Operations

Not applicable.

I-1g Schedule for Closure

The DOE-RL intends to initiate closure of the Alkali Metal Treatment Facilities in calendar year 2011.

Closure of any of the alkali metal treatment facilities shall be completed within 180 days of the final receipt of regulated waste. The following events will be completed on or before the time indicated below:

| TIME/DAY | ACTIVITY |
|---|---|
| -180 | Notification of intent to close |
| 0 | Final alkali metal waste accepted |
| +30 | Closure initiated |
| +60 | All alkali metal waste reacted |
| +120 | Decontamination of facility and equipment completed |
| +180 | Certification of closure completed |

I-1h Extensions for Closure Time

Not applicable.

I-2 POST-CLOSURE PLAN

Not applicable.

I-3 NOTICE IN DEED

The DOE-RL will file, within 90 days after the start of post-closure care period, the following documents to the local land use authority and the regulating authority. The land use authority is the Benton County Planning Department which is located at Courthouse Building, Prosser, Washington, 99350.

a. A survey plat indicating the location and dimensions of landfill cells to the extent the information exists and with respect to permanently surveyed bench marks will be submitted. This plat will be prepared by a certified professional land surveyor.

b. The following note is to accompany the survey plat: This plat describes real property in which hazardous wastes have been disposed and buried in accordance with requirements of 40 CFR Part 264 and/or WAC 173-303. Although this hazardous waste disposal facility is now closed, public health, environmental safety, and regulations issued by the EPA in 40 CFR 264.119 and/or the WDOE in WAC 173-303-610(9) require that post-closure use of the property never be allowed to disturb the integrity of the final cover unless it can be demonstrated that any proposed disturbance will not increase any risk to the human health or the environment.

c. A record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility, to the extent that the information exists, will be submitted. During the post-closure care period, any changes to this record will be submitted to the regulating authority.

Notice in Deed to Property

The DOE-RL will, in accordance with state law, sign, notarize, and attach the following notation to the deed within 180 days of the start of the post-closure care period:

TO WHOM IT MAY CONCERN:
The U.S. Department of Energy-Richland Operations Office, an operations office of the U.S. Department of Energy, which is a Department of the United States Government, the undersigned, whose local address is the Federal Building, 825 Jadwin Avenue, City of Richland, County of Benton, State of Washington, hereby gives the following notice as required by 40 CFR 270.14(b)(14) and/or WAC 173-303-806(4)(a)(xiv).

a. The U.S. Department of Energy is, and since April 1943, has been in possession in fee simple of the following described lands (legal description).

b. Since November 19, 1980, the U.S. Department of Energy-Richland Operations Office has disposed of hazardous and/or dangerous waste under the terms of regulations promulgated by the United States Environmental Protection Agency and/or Washington Department of Ecology to the above-described land.

c. The future use of the above-described land is restricted under the terms of 40 CFR 264.117(c) and/or WAC 173-303-610(7).

d. Any and all future purchasers of this land should inform themselves of the requirements of the regulations and ascertain the amount and nature of wastes disposed on the above-described property.

e. U.S. Department of Energy-Richland Operation Office have filed a survey plat with the Benton County Planning Department and with the United States Environmental Protection Agency Region X and/or Washington Department of Ecology showing the location and dimensions of landfill cells and a record of the type location and quantity of waste disposal within each area of the facility.

## I-4 CLOSURE COST ESTIMATE

The Federal government is exempt from this requirement [40 CFR 264.140(c) and WAC 173-303-620(1)(c)].

## I-5 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE

The Federal government is exempt from this requirement [40 CFR 264.140(c) and WAC 173-303-620(1)(c)].

## I-6 POST-CLOSURE COST ESTIMATE

Not applicable.

## I-7 FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE CARE

Not applicable.

## I-8 LIABILITY REQUIREMENTS

The Federal government is exempt from this requirement [40 CFR 264.140(c) and WAC 173-303-620(1)(c)].

APPENDIX I-1

LOCATION AND NUMBER OF COPIES OF CLOSURE PLAN

# APPENDIX I-1

## LOCATIONS AND NUMBER OF COPIES OF CLOSURE PLAN

Two copies of the Alkali Metal Facilities Closure Plan are official copies of the closure plan. These official copies are located at the following office:

U.S. Department of Energy-Richland Operations Office
Federal Building
825 Jadwin Avenue
Post Office Box 550
Richland, WA 99352

APPENDIX I-2

RESPONSIBLE PERSON FOR STORAGE AND UPDATING OF COPIES OF CLOSURE PLAN

# APPENDIX I-2

## RESPONSIBLE PERSON FOR STORAGE AND UPDATING OF COPIES OF CLOSURE PLAN

If a permit modification is requested during the active life of any of the facilities which changes the operating plans for facility design, the closure plans will be modified at the same time. In all other cases, a request for modification of a closure plan will be completed within 60 days after a change in operating plans, facility design, or events which affect that facility's closure plan. The following office will be responsible for updating the official copies of the closure plan:

Radiological and Environmental Safety Branch
Environment, Safety and Health Division
U.S. Department of Energy - Richland Operations Office
Federal Building - Room 619
825 Jadwin Avenue
P.O. Box 550
Richland, WA 99352
(509) 376-73787

APPENDIX I-3

CERTIFICATION OF CLOSURE

# APPENDIX I-3

## CERTIFICATION OF CLOSURE FOR THE ALKALI METAL FACILITIES

When closure is completed, DOE-RL will submit to the regulating authority both a self-certification and a certification by an independent registered professional engineer that the Alkali Metal Facilities have been closed in accordance with the specification of this approved closure plan.

Owner/Operator Closure Certification

The DOE-RL will self-certify with the following document or a document similar to it:

> I, (name), an authorized representative of the U.S. Department of Energy-Richland Operation Office located at the Federal Building, 825 Jadwin Avenue, Richland, Washington, hereby state and certify that the Alkali Metal Facilities, to the best of my knowledge and belief, have been closed in accordance with the attached approved closure plan, and that the closure was completed on (date). (Signature and date)

Professional Engineer Closure Certification

The DOE-RL will engage an independent registered professional engineer to certify that the Alkali Metal Facilities have been closed in accordance with this approved closure plan. The DOE-RL will require the engineer to sign the following document or a document similar to it:

> I, (name), a certified professional engineer, hereby certify, to the best of my knowledge and belief, that I have made visual inspection(s) of the Alkali Metal Facilities and that closure of the aforementioned facilities has been performed in accordance with the attached approved closure plan. (Signature, date, state professional engineer license number, business address, and phone number)

# SECTION J
# OTHER FEDERAL LAWS

In conformance with the requirements of 40 CFR, Section J, Other Federal Laws: 270.14(b), 270.3, the following Federal Laws have been reviewed and the U.S. DOE Hanford facility is operated pursuant to the rules and/or regulations promulgated under these acts.

1. The Fish and Wildlife Coordination Act of 1934 (PL 121 and Amendments). An act to promote the conservation of wildlife, fish, and game, and for other purposes.

   (PL 85-624) An act to amend the Act of March 10, 1934, to provide for more effective integration of a fish and wildlife conservation program with Federal water-resource development, and for other purposes.

   (PL 89-72) An act to provide uniform policies with respect to recreation and fish and wildlife benefits and costs of Federal multiple-purpose water resource projects, and for other purposes.

2. The National Historic Preservation Act of 1966 (PL 89-665 and Subsequent Amendments). An act to establish a program for the preservation of additional historic properties throughout the Nation, and for other purposes.

3. The Wild and Scenic Rivers Act of 1968 (PL 90-542 and Subsequent Amendments). An act to provide for a National Wild and Scenic Rivers System, and for other purposes.

4. The Coastal Zone Management Act of 1972 (PL 92-583 and Subsequent Amendments). An act to establish national policy and to develop a national program for the management, beneficial use, protection, and development of the land and water resources of the Nation's coastal zones, and for other purposes.

5. <u>The Endangered Species Act of 1973 (PL 93-205 and Subsequent Amendments).</u> An act to provide for the conservation of endangered and threatened species of fish, wildlife, and plants, and for other purposes.

The Hanford facility is also operated pursuant to the rules and/or regulations promulgated under the Clean Water Act, the Clean Air Act and its subsequent amendments, as well as the requirements of other applicable Federal laws through ongoing facility planning and operational monitoring/compliance activities of the Safety and Quality Assurance Divisions.

# SECTION K
# CERTIFICATION

Certification for the Alkali Metal Treatment and Storage Facilities Part B Permit Application is included in the Certification Statement submitted by the U.S. Department of Energy, Richland Operations Office, in the cover letter accompanying the complete Part B Permit Application for the Hanford Site.